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THE CLINICAL SIGNIFICANCE OF THE AUTONOMIC NERVES SUPPLYING THE VISCERA, AND THEIR RELATIONS TO THE GLANDS OF INTERNAL SECRETION

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WHEN we consider how carefully the cerebrospinal nerves have been studied, and how important each small twig is for the clinical pathology of disturbances of sensation on the one hand or of motility on the other, and then turn to the paucity of studies bearing upon the nerves which supply the viscera, we cannot help being impressed with the contrast. The lack of knowledge in the latter domain is all the more striking when we recall that it is precisely with the viscera that we, as workers in internal medicine, are predominantly occupied; except for scattered and non-systematic observations, the field of visceral neurology has, clinically, until recently, remained practically unexplored. The nerves going to the internal organs have, however, during the past two decades, strongly attracted the activities of anatomists, physiologists and pharmacologists, and their researches have thrown a brilliant light into regions hitherto obscure. They have revealed a series of mechanisms which, though of considerable complexity, are proving to be of the greatest importance, not only for the functions of the viscera themselves, but also for those of the body as a whole. It turns out that the nerves supplying the viscera stand in a position intermediate between the cerebrospinal nervous sys-

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tem and the internal organs; both the central nervous functions and the visceral functions are to a large extent dependent upon the mode of functioning of the visceral nerves. The state of tonus in the visceral nerves is in turn apparently dependent first, upon nerve impulses transmitted to them from the brain and spinal cord and secondly, upon the action of chemical substances, including the so-called hormones, produced in various organs in the body and especially in the glands of internal secretion. In the third place, the amounts of certain ions (Ca, Mg, Na, etc.) present in the medium through which the nerve-terminals act upon the end-organ (smooth muscle; secreting gland) seem profoundly to influence the activities of the system concerned.

Architecture of the Visceral Nervous system

It has been common to designate as the "animal," "somatic" or "cerebrospinal" nervous system the nerve paths related to the sense organs on the one hand and to the voluntary muscles on the other, and as the "sympathetic," "vegetative" or "visceral" nervous system the nerve paths which innervate the more automatic internal organs, especially all those organs containing involuntary muscle or secreting glands, or both. Thus the smooth muscle of the bronchi, of the stomach and intestine, of the blood vessels, of the skin, of the genital apparatus and of the eye, are all so innervated, as are the secreting glands of the whole body—sweat glands, salivary glands, lacrimal glands, mucous glands, gastric and intestinal glands, liver, pancreas, kidneys, and the glands of internal secretion.

The centripetal paths in the domain of the sympathetic nervous system are as yet but poorly understood, but the centrifugal paths, thanks to the researches of the histologists on the one hand, and the studies of physiologists like Gaskell, Langley, and their co-workers on the other, are now fairly well known to us. The centrifugal paths of the sympathetic system differ from those of the cerebrospinal system fundamentally in one point. In the cerebrospinal system the spinal cord is connected with a voluntary muscle fibre by means of a single neurone, the axis cylinder of which goes all the way from the anterior horn to the muscle without interruption. In the sympathetic system at least two neurones make up the path from the cerebrospinal axis to the smooth muscle or the secreting gland. Take, for example, the neurones connecting the spinal cord with a viscus. Of these two neurones, the

first has a cell-body in the spinal cord, and its medullated axone (so-called preganglionic fibre) runs through the anterior root of a spinal nerve and through the white ramus communicans into the sympathetic system, there to pursue a course of variable length, sometimes passing through several sympathetic ganglia, in order finally to terminate in an end-arborization (or synapse) upon the cell-body of the second neurone of the path, situated in some sympathetic ganglion. The axis cylinder of this second neurone is non-medullated and is known as a post-ganglionic fibre; it extends from the ganglion to the smooth muscle fibres, or to the secreting gland, which it innervates. Between the nerve terminal and the muscle or gland there seems to be an intervening substance (myoneural, or adenoneural); and in this medium the ions of calcium, sodium, etc., seem to exercise important functions.

It has long been known that many of the viscera receive nerve-impulses not only from the sympathetic system, but also through other nerve paths. Thus, though the heart receives impulses through the sympathetic which increase the rate of its beat, it also receives impulses through the N. vagus by which the rate of its beat is decreased. Similarly, the smooth-muscle of the gastro-intestinal tract has long been known to be doubly innervated, contraction being stimulated through the N. vagus, and inhibited through the N. sympathicus. The smooth muscle which controls the size of the pupil is also doubly supplied; the pupil dilates when the cervical sympathetic is stimulated, and it contracts when the N. oculomotorius is excited. It remained, however, for later studies to demonstrate, (1) that such a double and reciprocally antagonistic innervation holds throughout the whole body as regards smooth muscle and secreting glands, (2) that each of the two innervating systems has a similar architecture, the centrifugal path in each system between the cerebrospinal axis and the periphery consisting of at least two sets of superimposed neurones. The two antagonistic systems taken together have been called by Langley the "autonomic nervous system." What was formerly called the sympathetic system is that part of the autonomic system which is connected chiefly with the cervical, thoracic, and lumbar portions of the spinal cord; while those parts of the autonomic system connected chiefly with the mid-brain (fibres running in the N. oculomotorius), with the medulla oblongata (fibres running in the N. vagus and N. glossopharyngeus) and with the sacral portion of the spinal cord (fibres running in the N. pelvicus) are known as the

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"autonomic proper" or, better, as the "craniosacral autonomic system."*

In addition to these two sets of nerve fibres going to each viscus, some organs have an intrinsic nervous mechanism, partly subordinate to the two autonomic systems, partly independent of them; the plexuses of Auerbach and Meissner of the intestinal wall may be cited as an example.

The Effects of Electrical Stimulation of the opposing Autonomic Systems

In the region of the eye, electrical stimulation of the sympathetic causes dilatation of the pupil (M. dilatator iridis) and contraction of the orbital muscle, while electrical stimulation of the midbrain autonomic (N. III) contracts the pupil (M. sphincter iridis) and causes accommodation spasm (M. ciliaris).

In the salivary glands, stimulation of the sympathetic arrests salivary secretion, while stimulation of the hind-brain autonomic (chorda tympani) causes profuse salivation.

In the cardiac area, electrical stimulation of the sympathetic (N. accelerator) causes tachycardia, while electrical stimulation of the hind-brain autonomic (N. vagus) causes bradycardia.

In the digestive system electrical stimulation (N. vagus) causes increased secretion and hypermotility, while excitation of the sympathetic diminishes secretion and leads to relaxation of the smooth muscle.

In the pelvic domain electrical stimulation of the N. pelvicus causes contraction of the detrusor of the bladder, while electrical stimulation of the sympathetic relaxes this.

Chemical Stimulation of the opposing Autonomic Systems

The effects of chemical substances upon the autonomic nervous system as a whole and upon its various parts have been studied especially by the pharmacologists and experimental physiologists.

Nicotin acts upon each of the two antagonistic autonomic systems, interrupting conduction at the junction (synapse) of the pre-ganglionic fibres with the cell bodies of the neurones which give rise to the post-ganglionic fibres in the ganglia.

*The anatomy and physiology are still further complicated by the fact that each of these two systems contains two sets of fibres—one "favouring" the main function subserved, the other "inhibiting" it. For simplicity of presentation, this point is not extensively elaborated in my paper.

Certain chemical substances, however, show an elective affinity for one or the other of the two autonomic systems. For the sake of brevity the cranio-sacral autonomic system is usually referred to as the "vagal system," since it includes the autonomic fibres of the N. vagus, while the cervico-thoraco-lumbar autonomic system is usually referred to briefly as the "sympathetic system."

Epinephrin, or adrenalin, heightens the activity of the organs innervated by the sympathetic proper, but does not directly affect the functions depending upon innervation by the vagal system. The administration of epinephrin, therefore, is followed by symptoms similar to these yielded by electrical stimulation of the sympathetic (vaso-constriction, tachycardia, mydriasis, dry mouth, glycosuria, gastro-intestinal hypomotility); those who believe that adrenalin acts upon the sympathetic nerve speak of it as a definitely sympathicotropic drug; others believing that it may act on the myoneural or adenoneural junction rather than on the nerve itself, prefer the term "sympathomimetic" to the term "sympathicotropic" or "sympathicotonic."

Certain other drugs act almost as electively toward the vagal system as does epinephrin toward the sympathetic. They are the so-called vagotropic drugs, and include two groups. The members of the first group, including pilocarpin, muscarin, physostigmin, cholin and digitalis, stimulate the vagal system; they are "vagomimetic," producing effects identical with those which follow electrical excitation of this system (miosis, salivation, bradycardia, gastric hyperacidity and hypermotility, pollakiuria). The members of the second or "vagoparalytic" group, including atropin, hyoscin and euphthalmin, seem to paralyze the terminals of the vagal system and lead therefore to effects similar to those resulting from electrical excitation of the antagonistic sympathetic system (mydriasis, dry mouth, tachycardia, etc).

As yet no drug has been discovered which paralyzes the whole sympathetic system comparable with the general exciting effect of epinephrin. A drug known as ergotoxin, which has been studied by Dale, seems to paralyze especially the so-called favouring sympathetic fibres, but not the so-called inhibiting fibres.

The vagotropic drugs also act somewhat less generally throughout the whole cranio-sacral autonomic system than does epinephrin on the sympathetic proper; thus atropin acts more vigorously on the autonomic fibres innervating the head and the heart than upon the fibres situated more caudalward; it has relatively little effect upon the sacral autonomic fibres innervating the pelvic

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viscera. Again, pilocarpin exerts its maximal effect upon secretory fibres, having relatively little effect upon cardio-inhibitory fibres. Muscarin, on the contrary, inhibits the heart vigorously and may cause standstill through vagus irritation.

From what has been said, it is obvious that in studying clinically a phenomenon in autonomic domains, we have to try to find out whether, in the doubly innervated organ, the effect is due to excitation of one system or to paralysis of the other system. A tachycardia, for example, might be due to stimulation of the N. accelerans, say by coffee, or to paralysis of the N. vagus. Again, a dilated pupil may be the result either of sympathetic irritation or of oculomotor (autonomic) paralysis.

In addition to chemical stimulation by substances of exogenous origin, the antagonistic autonomic nervous systems are constantly being influenced by substances of endogenous origin originating in the body metabolism. Among the sympathicotropic substances of endocrine origin may be mentioned (1) epinephrin, (2) iodothyrin and (3) pituitrin. Many believe that the epinephrin (adrenalin), which is being constantly formed in the medulla of the adrenals and in the chromaffine system generally, is responsible for a continuous excitation (or perhaps sensibilization) of the sympathetic system proper. At any rate, epinephrin produces effects in the body similar to the effects of electrical stimulation of the sympathetic; it is thus a "sympatho-mimetic" substance, in the sense of Barger and Dale. The exact place of action is still in dispute, though the evidence favours the view of Elliott that it is neither in the nerve itself nor in the end-organ but in a special structure intercalated between the two—in the case of smooth muscle at the "myoneural junction." Less general in their effects, but also, apparently, sympathicotonic in nature, are the substances iodothyrin and pituitrin. Iodothyrin, a hormone originating in the thyroid gland, has an especial effect upon the thoracic and cervical sympathetic and leads, when present in excess, to tachycardia, widened lid slits, exophthalmos and hypersusceptibility of the pupils to epinephrin. Pituitrin, arising in the posterior lobe of the hypophysis, causes vaso-constriction (other than renal), polyuria, and vigorous contraction of the bladder and uterus.

Among the vagotonic drugs of endogenous (or endocrine) origin may be mentioned cholin, which is formed in the cortex of the adrenals. Experiments with cholin show that it possesses an action very similar to pilocarpin. It is certainly interesting that one small organ like the adrenal gland manufactures in its medulla

the substance epinephrin (adrenalin) which is sympathicotonic (sympathomimetic) in its effects, and in its cortex another substance, cholin, which is vagotonic (vagomimetic) in its effects. Extracts of the whole adrenal would, therefore, contain two substances which, as far as the two autonomic systems are concerned, tend to neutralize one another.

There are probably other vagotropic hormones formed in the body, but our knowledge of them is as yet very meagre. We know, for example, that the internal secretion of the pancreas antagonizes epinephrin (or the formation of epinephrin), a fact doubtless of importance in connexion with the pathology of some forms of diabetes mellitus. Again, in congenital insufficiency of the chromaffine system (status thymico-lymphaticus), or in acquired insufficiency of this system (Addison's disease), the cranio-sacral autonomic innervations are in excess of the sympathetic innervations, many think because of deficiency in the supply of the sympathicotonic hormone, epinephrin.

In how far those sudden and violent excitations of the autonomic nervous system which accompany strong emotions are due to the intervention of the glands of internal secretion, and in how far they depend upon direct neural conduction from the brain, we are as yet but ill-informed. I need only remind you of the vasodilatation of the face in the blush of shame, of the stimulation of the lacrimal glands which yields the tears of sorrow, of the palpitation of the heart in joy, of the stimulation of the sudoriparous glands which precedes the sweat of anxiety, of the stimulation of the vaso-constrictors, the pupil dilators and the pilomotors in the pallor, mydriasis and goose-skin of fright, to illustrate some of these violent autonomic excitations. While we do not yet understand the exact mechanisms of association among the activities of the cerebrum, the endocrine glands and the reciprocally antagonistic autonomic domains and their end-organs, we can begin to see the paths which must be followed in order that more exact knowledge may be gained.

In the following table, compiled from the papers of several authors (Langley, Brodie and Dixon, Elliott, Dale, Meyer and Gottlieb, Eppinger and Hess, Fröhlich and Loewi, Biedl, Higier) the effects of electrical and chemical stimulation of the two autonomic systems are epitomized:

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Effect of sympathetic stimulation.	Effect of Atropin	Effect of Epinephrin	Organ	Effect of Pilocarpin	Effect of Ergotoxin	Effect of Craniol-sacral autonomic stimulation
Stimulates (Th. I and II)	Paralyzes	.....	Sphincter } Iridis.	Stimulates	....	Stimulates (N. III).
	.....	Stimulates	Dilator }			
Stimulates (Th. I-III)	Paralyzes	.....	M. ciliaris	Stimulates	....	Stimulates (N. III).
	.....	Stimulates	M. orbitalis (Mueller's)	Paralyzes	Paralyzes	
Constricts (Th. II-IV)	Paralyzes	(Stimulates ?)	Salivary glands	Stimulates	....	Stimulates chorda tympani.
	.....	Constricts	Cerebral bloodvessels	.....	....	Dilates (N. X).
		Dilates	Oral bloodvessels	.....	....	Constricts (N. IX).
Constricts (Th. II-IV)	Constricts (?)	Constricts	Cutaneous bloodvessels of head			
	Dilates	Dilates	Coronary bloodvessels	Constricts		
Constricts (Th. II-L. IV)	.....	Constricts	Intestinal bloodvessels	.....	Dilates	
Constricts (L. I-IV)	.....	Constricts	Genital bloodvessels	.....	....	Dilates (N. pelvicus).
Stimulates (Th. II-L. IV)	Inhibits	Inhibits	Sweat glands	Stimulates		
Stimulates (Th. IV-VII)	.....	Stimulates	Mm. arrectores pilorum (face)	.....	Paralyzes	
Stimulates (Th. I-V)	Stimulates	Stimulates	Heart muscle	Inhibits	Inhibits	Inhibits (N. X).
Relaxes (Th. II-IV)	Relaxes	Relaxes	Esophagus	Excites	....	Excites (N. X).
Paralyzes (Th. II-L. IV)	Paralyzes	Paralyzes	Cardia	Excites	....	Excites (N. X).
Diminishes (Th. II-L. IV)	Diminishes	.....	Tonus of Stomach	Increases	....	Increases (N. X).
Paralyzes (Th. II-L. IV)	Paralyzes	Paralyzes	Peristalsis of stomach	Increases	....	Increases (N. X).
Diminishes (?)	Diminishes	Diminishes(?)	Secretion of stomach	Increases	....	Increases (N. X).
Inhibits (Th. II-L. IV)	Paralyzes	Paralyzes	Motility of intestine	Excites	....	Excites (N. X).
Relaxes (L. I-IV)	Relaxes	Relaxes	Colon	Excites	....	Excites (N. pelvicus).
Relaxes (L. I-IV)	Relaxes (?)	Relaxes	M. sphincter ani	Cramps	....	Cramps (N. pelvicus).
Relaxes (Th. II-L. IV)	Relaxes	Relaxes	Gall-bladder	Contracts		Contrasts (N. vagus).
Inhibits (?)	Inhibits	Inhibits	Pancreas secretion	Excites	....	Excites (N. X).
	Inhibits	Inhibits	Bronchial musculature	Excites	....	Excites (N. X).
Contracts (L. I-IV)	.....	Contracts	M. sphincter vesicæ	.....	....	Inhibits (N. pelvicus).
Relaxes (L. I-IV)	.....	Relaxes	M. detrusor vesicæ	.....	....	Contracts (N. pelvicus).
		Contracts	Uterus (pregnancy)	Relaxes		
		Relaxes	Uterus (gravid)	Contracts		
Contracts (L. I-IV)	.....	Contracts	M. retractor penis	.....	....	Relaxes (N. pelvicus).
Increases (Piqûre of Cl. Bernard)	.....	Increases	Sugar tonus	Diminishes		
Increases (Piqûre vermis)	.....	Increases	Heat tonus			
Contracts	.....	Contracts	Pigment cells	Dilates		

The Tonus in the Autonomic Systems, and the Balance Maintained

While the body is alive there is, constantly, a certain amount of activity in each of the antagonistic systems. In other words, a certain "tonus" prevails in each system, maintained (1) by stimuli arriving in the autonomic systems through neural paths, and (2) by direct chemical action (hormones) upon the systems. This matter of tonus* is very complex, since so many factors, neural and chemical, are involved, and since each system can be acted upon at any one of several points between the cerebral cortex and the end-organ (smooth muscle; secreting gland). The balance maintained normally between the two antagonistic systems is one of the most interesting of physiological phenomena. Think, for example, of the rate of the heart beat—how constantly it is maintained at a given level in each individual when the body is at rest; the impulses arriving through the vagal system just balance those arriving through the sympathetic system, so as to maintain a rate of approximately seventy-two beats per minute. And a similar balance is maintained in other autonomic domains (e.g., pupils, bronchial musculature, gastric glands, gastro-intestinal muscle, sweat glands, bladder muscle, etc.).

This equilibrium is all the more remarkable when one considers how frequently it is temporarily upset in the exercise of physiological function. The play of the pupils with varying light, the watering of the mouth at the smell of savory food, the response of the heart to exercise and emotion, the flow of gastric juice on adequate stimulation, the opening of the bile duct at the call of the chyme, the transport of the colonic contents through one-third of the length of the colon through one vehement contraction every eight hours, the sudden relaxation of the sphincter and contraction of the detrusor of the bladder in micturition, the violence of contractions in the domain of the N. pelvicus in parturition in the female and in ejaculation in the male, come to mind at once as examples of sudden physiological overthrow of balance.

Autonomic Disturbances Met With Clinically

Since 1910 I have been interested in examining the patients in the medical wards of the Johns Hopkins Hospital with especial reference to pathological disturbances of innervation in autonomic domains. One of my associates, Dr. Frank J. Sladen, the resident

*A distinction must, of course, be made between tonus and excitability.

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physician of the hospital, has been my co-worker in this study and we have already published a preliminary report on the subject in the *Transactions of the Association of American Physicians.*

Among the patients suffering from so-called functional nervous disorders (neurasthenic, hysterical and psychasthenic states) or from disturbances of the glands of internal secretion (the thyreopathies, diseases of the hypophysis, diseases of the chromaffine system, diseases of the genital glands, etc.), we have found a material very suited to our purposes, from which we have obtained a rich yield in "autonomic" symptoms.

On this occasion time will not permit of any extensive analysis of these cases. Suffice it to say that we have been impressed by the possibility of enrichment of the clinical histories in patients of these types by careful attention to the symptoms referable to abnormal autonomic innervation. We have been struck with the fact that when one abnormal autonomic sign is observable, a systematic examination of the viscera with autonomic innervations in mind will almost always reveal a number of other deviations from the normal. The kinds of symptoms and signs observable may readily be deduced from an examination of the table given above, in which the effects of electrical and chemical stimulation are recorded. For clinical purposes the following table of the more common symptoms resulting from pathological innervation of smooth muscle and secreting glands may be convenient.

a. SYMPTOMS AND SIGNS IN THE HEAD AND NECK

(a) *The Eyes.* These include (1) myosis and mydriasis; (2) accommodation spasm and accommodation paralysis; (3) widened and narrowed lid slits; (4) von Graefe's sign; (5) Dalrymple's sign; (6) infrequent winking (Stelwag); (7) insufficient maintenance of convergence (Moebius); (8) exophthalmos and enophthalmos; (9) epiphora and dryness of the eyeballs; (10) Loewi's test (positive adrenalin mydriasis); (11) Argyll-Robertson pupil; (12) anisocoria.

(b) *In the Nose and Mouth.* (1) excess of saliva with constant spitting; (2) dry mouth or xerostomia; (3) coryza vaso-motoria.

(c) *In the Skin.* (vide infra).

(d) *In the Meninges.* Pain of vaso-motor origin (cephalalgia; hemicrania).

b. SYMPTOMS AND SIGNS REFERABLE TO THE RESPIRATORY SYSTEM

(1) Laryngismus and laryngeal crises; (2) asthmatic attacks; (3) pulsus irregularis respiratorius; (4) Aschner's phenomenon

(pressure on the eyeballs stimulating the first, the trigeminus and then, reflexly, the vagus and leading to arrest of respiration in the expiratory phase, with slowing of the pulse).

c. SYMPTOMS AND SIGNS IN THE CIRCULATORY SYSTEM

(1) Tachycardia; (2) bradycardia; (3) changes in conduction time (dromotropic disturbances); (4) pulsus irregularis extrasystolicus; (5) angina vaso-motoria; (6) Aschner's phenomenon (vide supra); (7) changes in blood pressure; (8) peripheral hyperæmias and anæmias; (9) intermittent claudication; (10) dyspragia intermittens intestinalis; (11) acrocyanosis; (12) urticaria.

d. SYMPTOMS AND SIGNS IN THE DIGESTIVE APPARATUS

(1) Œsophagismus; (2) cardiospasm; (3) gastric neuroses (hyperacidity, achylia, gastrosuccorrhœa, pylorospasm, gastrospasm, gastric atony); (4) atonic and spastic constipation, diarrhœa nervosa, colica mucosa, anal sphincter spasm.

e. SYMPTOMS AND SIGNS IN THE URO-GENITAL SYSTEM

(1) Retention and incontinence of urine; (2) pollakiuria and tenesmus; (3) renal colic; (4) disturbances of libido, of erection, of ejaculation and of orgasm; (5) uterine atony and certain menstrual disturbances.

f. SYMPTOMS AND SIGNS IN THE CUTANEOUS SYSTEM

(1) Goose-flesh; (2) trichopilar crises; (3) contractions of smooth muscle of tunica dartos and of nipple; (4) hyperhidrosis and anhidrosis (unilateral or bilateral); (5) bromidrosis; (6) vasoconstriction (pallor); and vaso-dilatation (erythema); (8) dermographismus.

g. SYMPTOMS AND SIGNS REFERABLE TO THE HÆMOPOIETIC, METABOLIC, AND ENDOCRINE ORGANS

(1) Eosinophilia; (2) eosinopenia; (3) lymphocytosis; (4) status thymico-lymphaticus; (5) the pigmentations; (6) increased or diminished glucose tolerance (glycosuria); (7) increased or diminished fat tolerance (steatorrhœa).

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Local and General Forms of Abnormal Vagotony and Sympathicotony

Dr. Sladen and I in our studies have tried to find out whether or not the conception of a clinical abnormal vagotony or sympathicotony, as postulated by the Viennese clinicians, Eppinger and Hess, is justifiable. The experimental physiological studies and the pharmacological researches bearing upon the reciprocal control of the two antagonistic subdivisions of the autonomic nervous system to which I have already referred, having yielded such interesting results, an attempt at clinical application was almost certain to follow. For it would seem *a priori* not improbable that neural and chemical disturbances arising from various natural causes, and resulting in increased or decreased excitability or in too high or too low a tonus in either of the two systems, could be accountable for recognizable clinical symptoms.

While the writings of clinicians contain many instances of disturbance which we can now see belong to the autonomic domain, it is to Eppinger and Hess that we owe the establishment of the clinical conceptions of "vagotonia" and of "sympathicotonia"—conceptions which bring symptoms in widely separated parts of the autonomic domain together. They separate a so-called "vagotonic constitution" from an outspoken clinical "vagotonia," the former being characterized by (1) a hyper-sensitiveness to pilocarpin, (2) a relative insusceptibility to sympathetic stimuli, and (3) various clinical symptoms indicating heightened tonus throughout the cranio-sacral autonomic system. The sympathicotonic constitution, in turn, is characterized by (1) a hypersensitiveness to epinephrin, (2) a relative insusceptibility to pilocarpin and atropin, and (3) various clinical signs of heightened tonus throughout the sympathetic system proper.

Clinically an outspoken case of vagotonia may include a varying number of the following signs (corresponding to stimulations of the cranio-sacral system):—small pupils, accommodation spasm, wide lid slits, salivation, epiphora, profuse sweating, reddened face, cold and moist hands and feet, bradycardia, pulsus irregularis respiratorius, bronchial asthma, eosinophilia, hyperacidity, gastrospasm, cardiospasm, pyloriospasm, spastic constipation, biliary colic of nervous origin, anal-sphincter cramp, pollakiuria, and priapism.

In the studies made with Dr. Sladen, we found that in a certain number of cases a fairly general vagotonia or a fairly general sym-

pathicotonia may exist, though local vagotonias and sympathicotonias are common; a large number of cases present vagotonic signs in one domain and sympathicotonic signs in another domain; and in some cases mixed signs in a single domain were met with.

We have used the pharmacodynamic method in the control of our cases. As a stimulant of the cranio-sacral (or "vagal") system we have given pilocarpin hypodermically in doses of 0·01 to 0·003 grams (grs. $\frac{1}{6}$ to grs. $\frac{1}{20}$), and as a paralysant of the same system, atropin hypodermically in doses of 0·001 to 0·00065 grams (grs. $\frac{1}{50}$ to grs. $\frac{1}{100}$). As a sympathetic stimulant we have used epinephrin (adrenalin) usually in doses of 1 mg. hypodermically. Some use for these tests 1 mg. atropin, 1 cg. pilocarpin and 1 c.cm. of adrenalin solution (1:1000)*.

We found some patients who reacted in an outspoken way to both pilocarpin and epinephrin, each of the two systems seeming to be hypersensitive. The pilocarpin-sensitive patients react with salivation, sweating, nausea, epiphora, flushing, and a fall in blood pressure. They react to atropin by palpitation, dryness of the mouth and throat, and precordial oppression. The epinephrin-sensitive patients on being given epinephrin react with tremor, sense of cold, rigor, glycosuria and rise in blood pressure.

An analysis of the various pharmacodynamic reactions observed in twenty-one cases in this way will be found in our published paper. In six patients who exhibited marked sensitiveness to pilocarpin, the vagotonia varied somewhat in different domains, though, usually, the vagotonic signs were most marked in that portion of the autonomic domain to which belonged the clinical symptom which had first attracted our attention. Thus, for example, in a patient suffering from bronchial asthma, certain other symptoms in the hind-brain domain were conspicuous. In epinephrin-sensitive cases, also, there was no sure way of prophesying in what domains the sympathicotonic signs would be most conspicuous.

We also studied the correlation between clinical symptoms and pharmacodynamic autonomic reactions in another way. Taking the cases which clinically showed various vagotonic manifestations, we found that in twenty-eight instances the response to vago-

*Higier recommends systematic pharmacodynamic testing as follows: (a) Conjunctival instillation and subcutaneous application of epinephrin; (b) Subcutaneous injection of epinephrin, 0·01 mg. per kg. of body weight three hours after swallowing 100 grams of glucose (to determine glucose tolerance); (c) Subcutaneous injection of atropin sulphate, 0·01 mg. per kg. of body weight; (d) Injection of pilocarpin muriate, 0·1 mg. per kg. of body weight.

tropic drugs was positive in eighteen. Again, in thirty-one cases in which there were marked sympathicotonic signs of one sort or another observable clinically, twenty yielded a positive reaction on subcutaneous injection of epinephrin. We came to the conclusion, therefore, that a conspicuous vagotonic or sympathicotonic sign, as far as the material thus far studied is concerned, may also be a mark of a pilocarpin-sensitive or epinephrin-sensitive individual in about 64 per cent. of the instances.

As to whether an exaggerated tonus (or excitability) in one of the reciprocal antagonistic systems is accompanied by a diminution of tonus (or of excitability) in the other, our results differ somewhat from those of other workers. We found a harmonious agreement between the pharmacodynamic reactions and clinical manifestations in only seven of nineteen cases. In two patients who exhibited pilocarpin-sensitiveness the sympathicotonic signs were nearly as conspicuous as the vagotonic signs, and in three patients sensitive to epinephrin the clinical signs referable to heightened tonus in each of the systems were approximately equal. In five patients sensitive to epinephrin it must be admitted that clinically vagotonic signs predominated.

It is obvious, therefore, that the mere demonstration of pilocarpin-sensitiveness or of epinephrin-sensitiveness does not permit, in every case, of an immediate conclusion regarding heightened tonus in the vagal or in the sympathetic autonomic system. Nevertheless the setting up of a vagotonic type and of a sympathicotonic type as schemata seems to us valuable and stimulating to clinical observation. The whole domain of visceral neurology should from now on be cultivated with more fruitful results, now that we begin to understand the relations of the viscera and their innervations to the central nervous system on the one hand and to the hormones arising in the endocrine glands in the other. In the pharmacodynamic tests we have, to use Januschke's fine image, tuning keys by means of which we can operate upon the complicated stringed instrument of the body, and voluntarily make one string tighter to increase its vibrations, or another looser to dampen its function.

Our studies lead us to agree with those who urge that the conception of vagotony be not too rigidly defined; we must be prepared to meet with exceptions as yet difficult to explain, and with deviations from the pharmacodynamical reactions which might be expected. Certain of the hormones may be less elective than the physiologists have taught us to believe; thus the occurrence of vagotonic signs mixed with sympathicotonic signs in the forms of Basedow's disease accompanied by outspoken psychic distur-

bances (von Noorden, Jr., and others), demand more careful study. As Higier wisely remarks, the new conceptions of vagotony and sympathicotony will doubtless undergo evolution like the majority of clinical conceptions in neurology. We can, nowadays, make a diagnosis of tabes, Basedow's disease, Parkinson's disease, or of multiple sclerosis, even in the absence of one or more of the original pathognomonic signs, or cardinal symptoms, described by their discoverers.

For therapy, as well as for diagnosis, clinical men will do well from now on to give due consideration to disturbances of the visceral nerves. In no part of internal medicine can more be expected from pharmacotherapy; we have at our disposal a host of agents—nicotin, atropin, pilocarpin, physostigmin, colchicin, adrenalin, cocain, ergotoxin, calcium, to mention only some of them—which have already been shown to act more or less electively; may we not hope that our clinics may find out how effectively to use them and others still to be discovered, in regulating the functions of the visceral nerves in at least many of the instances when they are disturbed.

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ADDRESS IN GYNÆCOLOGY

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TO visit London is always a pleasure, to come as an invited guest to the Canadian Medical Association in the Forest City an honour which I deeply appreciate.

This evening I want to briefly outline the various methods adopted to educate the public as to the early recognition of cancer, and to impress upon them the fact that in the early stages of the disease many patients can be permanently cured.

For several years the medical profession has been fully cognizant of the fact that the laity has a false idea about cancer, namely the widespread feeling that it is a blood disease and that consequently it cannot be cured. It is our duty to impress upon them the fact that in the beginning it is a strictly local process, a process that is amenable to surgical treatment.

Several earnest campaigns have been waged during the last few years. The various committees have devoted their attention mainly to pointing out to the family physicians what might be accomplished by early operation and urging the physician to send his patient at the earliest possible moment to the surgeon. Notwithstanding the splendid efforts in this direction little has been accomplished, not because the physicians were necessarily negligent, but because the patients did not present themselves until the disease was far advanced It was finally realized that if satisfactory results were to be accomplished the message must be carried directly to the people. It was pointed out that fifteen or twenty years ago it was exceedingly difficult to prevail upon persons with appendicitis to be operated upon; now with the knowledge they have, after appendicitis has been diagnosed, operation is at once sought, and the only question asked by the patient or his relatives is—to what hospital shall I go? When the laity are made fully aware of the cancer situation they will on the first sign of the disease present themselves for examination and will gladly avail themselves of surgical aid.

Delivered at the Annual Meeting of the Canadian Medical Association, London, Ontario, June 1913.

At the meeting of the Clinical Congress of Surgeons of North America, held in New York City in November, 1912, a cancer campaign committee was appointed mainly through the efforts of Dr. Franklin H. Martin of Chicago. The committee was instructed to write, or have written, articles on the subject of cancer and was further instructed to have these published in the daily press, the weekly or monthly magazines, as might be deemed most expedient. The committee has gone cautiously, and through the aid of that master organizer and medical editor, George H. Simmons, was able to enlist the coöperation and support of some of the most representative magazines in the country. Mr. Bok, editor of the *Ladies' Home Journal* and Mr. Harriman, managing editor of the same journal, manifested the deepest interest in the campaign. After much thought they came to the conclusion that a lay writer could better reach the public ear, and they naturally selected Mr. Samuel Hopkins Adams, who was such a dominant factor in the campaign against patent medicines, and who was last week made an associate member of the American Medical Association in recognition of his splendid crusade. Mr. Adams visited various surgical clinics throughout the country and then wrote a most comprehensive article on the subject. His first article was published in the *Ladies' Home Journal* for May, 1913. It is well worth a thorough perusal not only by every layman, but also by each member of the medical profession. *Collier's Weekly* for April 26th, 1913, and the May number of *McClure's Magazine* also contain admirable articles on the same subject from Mr. Adams' pen. The medical profession is under a deep debt of gratitude to Mr. Bok, Mr. Harriman, Mr. Collier and Mr. McClure for so freely opening their pages for the enlightenment of the public on this very important subject.

It has been estimated that these three articles reached a reading public of between eight and ten millions. *Harper's Weekly* for March 29th, also contained a timely article urging cancer patients to be operated upon without delay. Abstracts from the magazine articles appeared in many of the daily papers throughout the country. The Baltimore *Sun* contained a full column, the Baltimore *News* and the Baltimore *American* each devoted ample space to the subject. The New Orleans *News-Item* gave a full abstract of Mr. Adams' article from *McClure's* and the Detroit *News-Tribune* for Sunday, April 27th, 1913, with the permission of the *Ladies' Home Journal*, copied Mr. Adams' article in full. I have just mentioned a few of the daily papers that have given this matter

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wide publicity. The entire press of the country has been most liberal in its dissemination of our knowledge of cancer. This support was not confined to the papers of the United States. The Canadian papers have also strongly emphasized the necessity of patients suffering with cancer having their ailment attended to promptly. I have spendid clippings from the daily press of London, Toronto, Montreal, St. John, N.B., Winnipeg and Vancouver. Our committee wishes to express our deep sense of appreciation of the hearty support given us by the press of Canada and of that of the United States in the dissemination of this knowledge, and we feel confident that they will gladly continue to publish any new data on the subject, until every one on the continent has a clear idea of just what cancer is, what its early symptoms are, and how they can best be treated.

An advertiser is naturally looking for results, and in like manner the cancer campaign committee was anxious to find out what influence Mr. Adams' article had had on the community at large. It was not long before they were forthcoming. I will relate just a few of them to you. Within a week after the appearance of Mr. Adams' publication a colleague of mine told me that he had just operated upon a patient with cancer of the breast. The nodule was not larger than a pea. When asked why she came so early, she said that she had just read the article in the *Ladies' Home Journal* and felt that it was unwise for her to delay,—the outlook in this case is excellent. Another colleague had for weeks been urging a patient with cancer to be operated on, but to no purpose. Within three days after the appearance of the article which she had carefully read she entered the hospital and was operated upon. Dr. C. Jeff Miller, of New Orleans, wrote me that, as a result of the *Ladies' Home Journal* article, a lady soon came to him with an early cancer. Dr. T. C. Kennedy, of Indianapolis, under date of May 13th, 1913, writes. "A lady out in the state noticed a lump in the left breast. Seeing the article in the *Ladies' Home Journal* she immediately consulted her family physician who referred the case to me. I operated on her at St. Vincent's Hospital last Thursday, doing a Halsted. Here is a case that has a good chance of getting entirely well, as it was taken early."

Dr. Franklin H. Martin, of Chicago, early in May of this year saw a beginning carcinoma of the breast. The husband had just read the article in the *Ladies' Home Journal*, and insisted on his wife consulting a surgeon. Dr. Martin removed the entire breast and the axillary glands, and feels sure that the outlook for a permanent cure is an excellent one.

My experience as to the strong impression made by Mr. Adams' article has been similar to those already related. In one morning I saw three patients from widely different points, one from New Orleans with some bleeding due to slight pelvic inflammation, another from Alabama with some bleeding due to a prolapsus, and a third from Maryland, with a small, but benign tumor of the breast. Each had read Mr. Adams' article, and each hastened her visit as a result of this article. All were afraid of cancer and in each case I was able to relieve the patient's mind, telling her that no malignancy existed. Two of these three patients required minor operations.

From what you have heard, the knowledge of cancer has already been widely disseminated and it is bound to bear fruit. The more the subject is investigated the clearer it becomes that if the women of the country are made aware of what can be done if cancer patients apply early for treatment, it will be unnecessary to pay much attention to the men. If men are sick, unless very ill they pay no attention to it, and only after they are urged by their mothers, wives, sisters or daughters, do they seek medical aid. As a matter of fact the woman is the health guardian of the household.

Skin cancer. Cancer of the skin is easily and promptly recognized and is usually soon brought to the attention of the physician.

Cancer of the lip is also soon discovered by the patient and as a rule the physician's advice is sought early. While in many instances wide excision of the growth is at once advised, yet it is appalling to find the number of patients that are still treated in a palliative manner. Only a few months ago a friend drew my attention to an ulcerated area on his lower lip. His associates had not noticed it because of his long moustache. On questioning him I was surprised and distressed to learn that a supposedly competent physician had been burning the "ulcer" every few days for fully two months. Very valuable time was lost. Within a few days the growth and the glands of the neck were removed. These glands were on microscopical examination found markedly involved by cancer, and the patient's ultimate outlook is a very gloomy one.

Cancer of the tongue. Any growth of the tongue naturally calls for immediate intervention. My colleague, Bloodgood, has frequently drawn attention to the small white patches on the lip or tongue of smokers. He looks upon these as precancerous lesions, and if after a week or two they still persist, then he advocates their immediate removal.

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Cancer of the stomach is one of the very frequent varieties of cancer. In the late stages, to be sure, it can be diagnosed from blood in the stomach contents, the reaction of the stomach juices, and by the co-existent nodule that can in some cases be detected. In the early stages of the disease, however, most of these signs are wanting, and it is only in the early stages that a reasonable hope of a permanent cure can be thought of. In the right upper abdominal quadrant we most frequently find gall-stones, duodenal ulcer, or cancer of the stomach. Any marked disturbance in this region calls for prompt operative interference. A delay in a case of cancer of the stomach until definite signs are present usually means a delay until the case is advanced too far for operation.

Cancer of the intestine may be detected early if the growth partially or almost completely blocks the lumen of the bowel, or if it be associated with a great deal of bleeding. Sometimes when the patient is thin the nodule can be palpated. In stout individuals, however, the cancer may have extended far before symptoms sufficiently definite to enable one to make a diagnosis, are present. If there be any obscure abdominal condition present, and if this does not yield promptly to treatment, then an exploratory operation should be promptly undertaken, as many valuable lives may in this manner be saved, lives that would be absolutely doomed if delay were advised.

Cancer of the rectum usually gives its tell-tale warning in the form of blood or of pain on defecation, and its recognition is not difficult.

I have referred only to the more common varieties of cancer; time will not permit me to discuss the subject in detail.

If we are successful in our cancer campaign, and of this there is not the shadow of a doubt, then we must be prepared to give these patients the best possible service. We must be able to diagnose accurately the borderline cases, and then when cancer does exist we must do such an extensive and thorough operation that the patient is given the maximum chance for a permanent cure.

In cancer of the skin, lip, tongue and rectum a diagnosis can usually be readily made by the surgeon in his regular examination. Cancer of the stomach can in the early stages be detected, as a rule, only with the possible assistance of the Roentgenologist, and mainly by an exploratory abdominal operation. The two chief classes of cancer that require expert pathological knowledge are cancer of the breast and cancer of the uterus.

Cancer of the breast. All surgeons meet with many nodules

in the breast. Some of these are definitely fibrous in character, others are definitely cancer, while not a few are on the borderline and can only be positively diagnosed on microscopic examination. It is wise to remove all breast nodules, but where malignancy exists it is imperative to do a most thorough and complete removal of the breast, pectoral muscles, axillary glands and fat. Bloodgood, after the most careful and painstaking study of the cases at the Johns Hopkins Hospital, has found that to remove a piece of cancerous breast for microscopical examination and then delay several days or a week for the pathologist's report is a most dangerous procedure, as nearly all of these patients have a recurrence. The cutting into the growth allows such a widespread dissemination of the cancer that the subsequent operation is of no avail. Consequently, in case of doubt a piece should be cut out and examined immediately, the area of the excision in the meantime being treated as a contaminated area, and if cancer is reported the breast is removed at once, the delay occasioned by the microscopic examination not having taken over ten to fifteen minutes at the outside.

There are many good surgeons through the country, but few good surgical pathologists, except in the teaching centres. The time is speedily coming when every hospital will have a trained and expert surgical pathologist on its staff, a man whose advice can be had at every operation. He will prove to be one of the hospital's most valuable assets. Some may ask why we have not more such men. The truth is that the young physician must make a livelihood, and as the pathologist receives as a rule a mere pittance for his work, few have the scientific perseverance to enter this field. This field must be made sufficiently remunerative to induce plenty of capable men to enter it. When once they embark upon it, learn what a fascination there is in following an individual case to its very rock bottom, obtain here and there a clue enabling them to forecast with a degree of definiteness and precision whether this or that patient will recover, and even every now and then discover something that has never been known to medical men before, then you will find men that will never give up the study of surgical pathology.

When I started medicine a quarter of a century ago, asepsis was slowly creeping into Ontario, and Lister's carbolic spray was still in vogue. We examined very little operative material microscopically in those days. The time is rapidly drawing near when every surgeon, before he becomes a real surgeon, must have as thorough a grounding in surgical pathology as he now has in the

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principles of bacteriology. Many conditions that are now obscure to him, after months of study of their finer structure in the laboratory are readily recognized with the naked eye. On opening the abdomen, whether in the clinic or in a small country house, he is always thoroughly familiar with whatever panorama the abdomen in the individual case may unfold. In one case he will find a small nodule not larger than a pin-head; this will give him a clue as to some pathological condition tucked off in a remote corner of the abdomen. In another operation he will at first glance think the case inoperable but will notice some small familar nodule partially buried in adhesions. He knows from past laboratory experiences that this is benign, and will go ahead and finish his operation. A high building requires deep foundations. Few surgeons of the future will attain marked renown unless these foundations consist in a thorough knowledge of surgical pathology, the material that they are daily confronted with.

Cancer of the uterus. Bleeding from the uterus that cannot be satisfactorily accounted for should always excite suspicion. On vaginal examination it is frequently possible to make out a uterine tumour. When the uterus is fairly normal in size and not nodular, and the cervix is normal, then of course the organ should be dilated and curetted. Before undertaking to make a diagnosis from scrapings one should have a thorough knowledge of the appearance of the normal endometrium at or between the periods, during pregnancy, and in old age; each is different and yet perfectly normal.

Hyperplasia of the Endometrium. I want to draw your attion to a common, and yet little mentioned, pathological condition of the endometrium causing exceedingly free bleeding at the period, and often reducing the patient's hæmoglobin to a very low point. The first cases of this kind that were brought to my attention came independently from Dr. F. R. Eccles and Dr. H. Meek, of this city, in 1895. These cases were reported in "Cancer of the Uterus," page 479, published in 1900. These patients are usually from thirty-five to forty-five years of age, but I have noted the condition in girls in their teens. The flow is excessive and the menstrual periods may be almost continuous, there is usually no intermenstrual discharge, however. The mucosa is much thicker than usual. On microscopic examination the surface epithelium is found intact. Some of the glands are very small, others much enlarged. The large glands may be either circular or tortuous. All are lined by thickened epithelium and the stroma is excessively cellular. Often the nuclei of the stroma cells contain nuclear figures. Scattered

throughout the stroma are frequently found large venous sinuses some of which are thrombosed. Cancer of the body of the uterus is diagnosed from its pattern and, secondly, from the changes in the individual cells. Gland hyperplasia histologically bears absolutely no resemblance to it.

Where carcinoma of the cervix exists the small cauliflower outgrowths from the cervix or the area of ulceration leave little doubt as to the diagnosis. If one is not certain, then a small wedge of cervix is removed and examined, preferably at once.

While speaking of carcinoma of the cervix I wish to draw your attention to a pelvic tumor that has thus far in the main escaped notice. Dr. D. S. D. Jessup, of New York, recently sent me a specimen of two tumours each of which had the same characteristics. In each case the tumour was attached to the cervix and grew into the rectal wall. Both growths were so firmly fixed that while the surgeon was doing a complete abdominal hysterectomy he had to remove at the same time a piece of rectal wall with the cervical growth. In both cases the tumour consisted of myomatous tissue with uterine mucosa scattered throughout it. In the February number of the *Proceedings of the Royal Society* is a report of two similar cases by Dr. Cuthbert Lockyer, of London.

I have had two cases which belong in this category. In the first case the myoma had not as yet become firmly grafted on to the rectum. In the second case the adenomyoma filled the left broad ligament, and on account of the patient's extreme weakness it could only be removed in part. I feel confident that, when all rectal growths are carefully examined histologically, some supposedly carcinomatous growths will prove to be adenomyomata. These cases are of so much interest that I will give them somewhat in detail.

CASE 1. *Myomata of the Uterus; Adenomyoma between the Cervix and Rectum and associated with Rectal Adhesions.*

Mrs. G. P., seen in consulation with Dr. Samuel T. Earle, March 17th, 1911. This patient had several small polypi in the rectum. The uterus lay back on the bowel and was apparently adherent. On March 22nd, of the same year, Dr. Earle burned off the rectal polypi. These were five or six in number and situated directly behind the cervix. Microscopic examination of these showed that they had been undergoing definite inflammatory changes, as evidenced by the quantities of polymorphonuclear leucocytes on the surface, and by the fact that the underlying stroma contained great numbers of small round cells.

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After Dr. Earle had finished his operation I opened the abdomen. The rectum was found adherent to the posterior surface of the uterus low down. On the left side was a corpus luteum cyst. This had evidently ruptured at some previous time, as the surrounding tissues were stained a dark brown. We did a complete hysterectomy removing the uterus and appendages. I then shelled out a small myoma 1 cm. in diameter from the left side of the pelvic floor and another 3 cm. in diameter with a secondary nodule 1 cm. in diameter lying on its surface. This combined nodule was situated between the rectum and vagina on the left. The patient made a perfectly satisfactory recovery. At a later date, however, she had definite renal trouble as evidenced by pus from both kidneys. *X*-ray examination showed a calculus in the pelvis of each kidney. As the left kidney had apparently given more trouble than the right we removed the stone from that kidney. The stone in the right kidney the patient still has, as it has given her very little trouble.

Pathological report, No. 16079. The uterus itself is little enlarged. Scattered over the outer surface of the organ are several small fibroids. On microscopic examination the endometrium shows definite endometritis. The larger nodule lying between the cervix and rectum is 4 × 3 × 2 cm. and the smaller one 1 cm. in diameter. The larger nodule on histological examination consists in the main of typical myomatous tissue, but at one point in a cleft are islands of typical uterine mucosa and at another point is a miniature uterine cavity. The smaller nodule only contains one or two gland-like spaces. From the history it will be noted that in this case the cervix was adherent to the rectum. We have here a connecting link between the ordinary adenomyoma of the uterus and an adenomyoma involving the rectum. It is the only case that I have ever seen showing this stage.

Case 2. *Adenomyoma in the left broad ligament and intimately blended with the rectum.*

Mrs. G. S., admitted to the Johns Hopkins Hospital, June 4th, 1913. This patient is thirty-seven years of age, and two years ago was operated upon in San Francisco, a myomatous uterus and enlarged ovaries being removed. At that time it was necessary to also remove a small portion of the rectum on account of dense adhesions.

Since operation she had had a great deal of pain in the lower abdomen and has for months had almost continual bleeding from the cervix. On her admission to the hopsital I found thickening

posterior to the cervix, also induration in both broad ligaments. Although she was in a very weakened condition from the continuous loss of blood we felt that something must be done. The cervix was dilated, and on curetting we brought away what on microscopic examination proved to be perfectly normal uterine mucosa. The supravaginal hysterectomy had evidently been a high one. The right broad ligament was indurated and board-like, and on the left side there was also thickening.

A few days later we explored the abdomen. When the operation was commenced her pulse was 145. We found the rectum densely adherent to the bladder, and the left broad ligament was filled out by a rather cystic growth. Those assisting at the operation thought that we were dealing with a malignant growth which had spread into the broad ligament. In order to determine definitely I cut the round ligament and separated the folds of the broad ligament, and found we were dealing with a cystic mass 6 cm. in diameter. This was gradually shelled out from its attachment to the rectum, but by this time the patient's pulse had become almost imperceptible and was between 180 and 190, although she had lost practically no blood. We removed the greater part of the growth but left a portion still attached to the rectum and did not dare explore the right broad ligament. A drain was introduced into the pelvis and brought out into the lower angle of the incision. When the cystic mass that was attached to the rectum and had occupied the left broad ligament was cut across, it was found to contain one large irregular cavity about 2.5 cm. in diameter. This contained chocolate-coloured fluid and was lined by a rather smooth-looking membrane which was brownish tinged. The outer coat looked like ordinary muscle.

On microscopic examination it was found that the wall of the blood-stained cyst was lined by one layer of cylindrical epithelium, and that this rested on a definite stroma consisting of cells having oval vesicular nuclei. The more solid portions of the growth were made up of non-striated muscle fibres arranged in whorls, and of quantities of uterine glands embedded in their characteristic stroma. In some places only two or three glands with the surrounding stroma were visible but at other points miniature uterine cavities were found.

We are here dealing with an adenomyoma which has formed a cystic mass in the left broad ligament and which has become densely adherent to the rectum. If the patient at a later date is in fair condition we will then attempt to shell out the thickening in

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the right broad ligament, remove the cervix and then a portion of the rectum to which the growth is intimately blended.

Since this note was made the patient had gradually become weaker. She died June 19th. These growths when once removed do not return.

To do the maximum amount of good for the increased numbers that will come for operation as a result of our labours, our surgeons must be thoroughly conversant with the anatomy of the given part and must have a full knowledge of the paths along which the cancer travels from its point of origin. In cancer of the lip the operator must consider the removal of the glands of the neck. In cancer of the breast he must be familiar with the lymph glands that are first involved, and in cancer of the rectum must remember that the liver is frequently secondarily invaded and that if such be the case, an extensive rectal operation is contra-indicated.

I shall never forget meeting one of my Baltimore colleagues abroad one morning and saying, "Why, I thought you were going to Dr. ——'s clinic this morning." The reply was, "I did. He was to do a breast operation at 8.45, I arrived at 9, and the operation was over." This was not long ago, and the surgeon has a world-wide reputation. If our work were to be as superficial and incomplete as in this case, then it were better not to undertake any campaign against cancer. But such is not the case, and admirable work is being done in many clinics, not in all, however, I am sorry to say.

Some surgeons fearing they will not be able to close the wound after an extensive breast operation are loath to remove as much tissue as is necessary. They accordingly make their flaps alarmingly near the cancer area. A recent method devised by my friend, Dr. Curtis F. Burnam, obviates this. The surgeon makes as wide a removal as he deems necessary giving no thought to the raw area left. After removal of the breast the raw area is measured and a skin area of sufficient size is removed from the abdomial wall. It does seem remarkable that this method has not been employed before as a routine proceedure, as the abdominal wall is so lax that a flap of practically any size can be removed and the resultant space easily approximated.

Every wide-awake business man has his hands on the reins continually, has careful records of his purchases and of his sales, and at regular intervals takes stock. Recently I was dining with the general manager of one of the greatest trunk railroads in the

United States. He was a keen-eyed business man. After dinner the conversation drifted to methods of keeping track of various data. On my asking him a question he took me back to the dining room in his private car and opened the buffet which in former years was usually stocked with viands, and showed me his card catalogue dealing with all phases of the road. In other compartments he had complete data of every piece of work being done on the entire road, also up-to-date statistics relating to the number and character of the employees of the road. This was a working office of the entire road where he could transact business no matter whether his car was lying on a siding or in a city distant to the home office, where a duplicate set of papers and files were kept. This railroad manager, no matter where he happened to be, was always ready at a moment's notice to satisfactorily transact his company's business.

Hospital management in years past was notoriously lax, but in recent times business methods have been introduced into many of the newer institutions. It would do all medical men good to visit up-to-date business houses and see the card index systems and the various short-cut methods employed in every day business. It would also be admirable for the trustees of the various hospitals to see to it that the same systematic and business-like methods are used in the registration of data in the hospitals with which they are connected, as they employ in their individual business. I cannot help thinking of the Episcopal clergyman in New York, who had as his board of trustees several wide-awake business men. On one occasion it took them several hours to discuss the expenditure of a few hundred dollars. Finally the clergyman in despair leaned over and whispered to one of the trustees, "How would you handle such a proposition in your business?" This trustee replied that such small matters never came to his attention. The ludicrous side of the situation suddenly dawned upon him. Here he and his brother trustees, all millionaires, were spending hours worrying over trivial matters—that would in their business offices be attended to by junior clerks. The trustee immediately moved that the rector be given authority once and for all to order what was necessary for the church, and to send in the bills to them. The trustees of the hospital and the various members of the medical staff are in some measure in a similar position to that board of trustees. Their time is too valuable to be continually taken up in routine, but it is their duty to see to it that competent clerks are employed to keep careful records of all patients entering the

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hospital or dispensary. The findings at operation must be recorded with precision and the microscopical examinations of the specimens added to the history.

This is an age of time-saving devices and all business men are keen to see what results have accrued from their endeavours. What applies to business applies equally well to the subject of cancer. What is the use of operating year after year in a routine manner, having but a hazy idea of what has finally become of the patient. At least one tactful clerk in every hospital should be assigned to the task of keeping in constant contact with those who have been operated on. In this manner one can at a glance tell how many patients have been relieved by operation. The results of one operator are compared with those of another—of course in a most friendly way, and there is no doubt that a runner can always make better progress with a pacemaker. The careful analysis of a large number of cases always demonstrates wherein future improvements can be made. This continually keeping track of the patients will in itself strongly impress the former patients with the hospital's interest in their welfare, and will stimulate them to urge their fellow companions to undergo the same treatment if they be taken ill.

These data to be of use must from time to time be thoroughly analyzed and published. You and I are continually gleaning knowledge from the publications of other men both on this and the other side of the water, but how many of us are doing our share in the dissemination of knowledge? In fact we manifest a remarkable tendency to become sponges instead of springs for the pouring forth of our medical experiences—experiences that other surgeons should know of and profit by. Follow up all your cancer patients, see what has become of them. Many of them will be dead, but some that you have lost track of are still living and well. You will soon become so interested in the return letters that you can hardly wait for the postman to arrive, and when now and then a reply says that the patient is alive and well at the end of ten or thirteen years it will warm the cockles of your heart, it will more than outweigh many of the disappointing results you have had and will make you feel that after all the fight is well worth the undertaking.

A year ago I was asked to write the surgeons of the Southern States to find out what their final results were after operation in cancer of the cervix. The results of my inquires are given in *Surgery, Gynecology and Obstetrics* for March, 1913. The vast majority had kept but scant histories, and had finally lost track

of their patients, so that at the present moment few surgeons in the country have any adequate idea of what their labours have accomplished. Do let me urge upon you the systematic recording of every cancer case, the employment of the most thorough operation in these cases, and the tabulation at yearly intervals of the results. You will thus continually improve your methods, will grow more enthusiastic in your campaign against this dread malady, and will at the same time give valuable data to your colleagues in the profession.

The aim of our cancer campaign committee was to stimulate a wide-spread interest in the subject among the laity. Its labours have already borne fruit. Within the last few weeks a most representative body of New York laity, both men and women, have joined forces with the medical profession in the formation of the American Society for the Control of Cancer. This committee is assured of excellent financial backing, and is bound to be a great factor for the dissemination of knowledge concerning cancer.

We must not overlook the pioneers in publicity. Dr. J. H. Carsten, of Detroit, Michigan, has for years been doing yeoman work in his state, Dr. John G. Clark, Dr. F. F. Simpson and Dr. J. M. Wainwright, in Pennsylvania, Dr. S. Leigh in Virginia, Dr. F. H. Jackson in Maine, and there are a host of others whose names I would like to mention. I would also mention the splendid work of the Council of the American Medical Association in publishing instructions under the chairmanship of Dr. H. B. Favill.

I would strongly urge upon the Canadian Medical Association, the most representative body of Canadian physicians, the advisability of at once appointing a cancer campaign committee for Canada. This could work independently or in close co-operation with one of the cancer campaign committees of the United States.

Much money has been given by philanthropic people for the study of the cause of cancer. Whether the ætiology of cancer will soon be discovered or not is problematical, but in any event the people of the country should be made thoroughly cognizant of the early symptoms of cancer and of the fact that many may be cured by early operation. I can imagine no gift that would yield the philanthropist a greater return than the satisfaction of knowing that as a result of his munificence thousands of lives of cancer patients had been saved by prompt operation.

You in the Dominion have the wealth, the broad-spirited men, and the thoroughly competent surgeons, see to it that in the near future the cancer results of Canada are equal to if not better than those of any other country.

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THE DIAGNOSIS AND TREATMENT OF ACUTE MASTOIDITIS

By George H. Mathewson, B.A., M.D.

IN the course of my work I have found that a great diversity of opinion still exists among the general practitioners in this locality as to the nature, the gravity, and the treatment of mastoid disease, and I have been forced to the conclusion that some effort should be made to put before them in concrete form the current teaching of the otologists. This is my excuse for introducing so wellworn a subject on the programme of this society.

By way of illustrating the divergent views of the family doctors, let me give you a few data. Not a few physicians were of the opinion, and strongly held to it too, that in cases of recent otitis media where swelling and fluctuation developed behind the auricle, there was no great danger or need for operative interference since there was no marked elevation of temperature. Other men pinned their faith on the presence of swelling of the tissues behind the auricle, holding the belief that in the absence of such swelling there could be no mastoiditis. A smaller number again expected a successful operation to be performed in cases which, when brought to the hospital, had definite symptoms of meningitis. In one case where the symptoms, including swelling behind the auricle, were clearly to be seen, the family physician agreed with the diagnosis but wished to defer the operation for six weeks until the patient should be in better condition. Another physician insisted that the very large fluctuating mass behind the auricle in his patient was caused by air which had come from the Eustachian tube, while still another put down the pain about the ear to neuralgia and had the patient's teeth extracted. I bring these few facts before you to show what some of the practitioners think on the subject and not with any idea of censuring them, but in the hope of coming to a clearer conception of the matter.

To start at the beginning, what is mastoiditis? It is an inflammation, not necessarily a suppuration, of that part of the temporal bone that is called the mastoid process. From the anatomical preparations which I have brought with me [specimens

*Read at the meeting of the Montreal Medico-Chirurgical Society, May 16th, 1913.

hown,] you can easily see that the middle ear is directly continuous, through the aditus, with that large cell in the upper part of the mastoid, which is known as the mastoid antrum. This antrum again is in communication with the other cells of the mastoid. The mastoid then is a sort of annex to the middle ear. Such being the anatomical relations between the middle ear and mastoid, it is evident that an acute otitis media can hardly occur without some involvement of the mastoid cells, and it is generally conceded that in all severe cases of acute otitis media the mastoid participates to a certain extent. The mastoid involvement is, however, usually slight and clears up without special treatment as the otitis becomes less acute.

In a small proportion of cases the mastoid is severely inflamed, and in a certain proportion of these again the inflammation goes on to suppuration. If suppuration occurs in the mastoid process, the necrotic focus is not necessarily in the mastoid antrum, but may be elsewhere, as in the tip, while the antrum is apparently normal. One usually finds the greater part of the process involved. Acute mastoiditis in the great majority of cases arises as a complication or sequela of an acute or subacute suppurative otitis media. While the temporal bone is often invaded during the course of a chronic suppurative otitis media, the resulting condition is very seldom a simple mastoiditis but rather a slow carious process in the roof of the tympanum or of the aditus or antrum with the formation, in most cases, of cholesteatoma. This carious disease may invade the labyrinth or the meninges, or produce cerebral or cerebellar abscess or sinus thrombosis, and very often gives but slight indication of its advance until the symptoms of its extension are all too clear, and it is too late to save the patient. In chronic suppurative otitis media operation should be undertaken *before* the occurrence of serious symptoms.

We have not the time at present to discuss all the complications of middle ear disease, so with this brief reference to the possible results of chronic suppuration, let us return to the consideration of that form of mastoid disease that usually results from acute otitis media.

Acute mastoiditis, then, resulting from, or at any rate accompanying, suppurative middle ear disease, is the form of mastoid disease that is commonly seen, and it is of vital importance that the family physician should be able to diagnose it early, for in its incipient stages it can often be aborted, and even if that happy result be not obtained, an early operation will lead to prompt recovery in almost all cases.

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Primary mastoiditis, that is, a mastoiditis that is not secondary to middle ear disease, has been described, but it is very rare. I have never seen such a case. I have, however, seen five or six cases which might have been mistaken for primary mastoiditis since the drum membrane and middle ear were normal at the time when the symptoms of mastoiditis became evident. In some of these cases I had seen the patient while the middle ear disease was active, and in the others, all of which were young children, the parents gave the history that there had been a discharge from the child's ears within a short time. The presence of an acute or subacute otitis media, then, may be considered as almost essential before one can make a diagnosis of acute mastoiditis. In this connexion, I should like to point out that a case of otitis media should show signs of improvement within a few days of its onset, especially if the drum membrane has ruptured, so that, if improvement does not take place, the attending physician should be suspicious of some complication, especially mastoiditis.

The symptoms of acute mastoiditis are: (1) tenderness on digital pressure on the mastoid process; (2) pain in the mastoid region; (3) œdema and redness of the soft parts behind the auricle, in some cases abscess; (4) prolapse of the postero-superior wall of the membranous meatus near the drum membrane; (5) the presence of an excessive amount of purulent discharge from the ear, especially when the pus is of creamy consistence; (6) elevation of temperature.

To my mind the most important of these symptoms is the presence of tenderness on pressure over the bone. This tenderness may be elicited in all parts of the mastoid in some cases, while in others, the tenderness is limited to certain areas only. The points where tenderness is most likely to be found are, first, over the site of the antrum that is just behind the external meatus; secondly at the tip of the process; thirdly, and much less frequently, at the spot where the mastoid emissary vein perforates the bone, that is, about an inch posterior to first point just mentioned.

The tenderness is of course due to an osteitis, or a periostitis of the underlying bone. The presence of tenderness does not mean that operative interference is necessary, but the persistence of tenderness after the use of proper antiphlogistic treatment does. In many cases of suppurative middle ear disease there is a moderate degree of mastoid tenderness, but this usually disappears promptly when the middle ear condition becomes less acute. Just here it may be worth while to bring to your notice that there are hysterical

persons who may claim that pressure on the mastoid is painful, in which contingency we must depend on other symptoms. The condition that is most apt to lead one astray is furunculosis of the meatus. The tenderness over the mastoid which accompanies some cases of furunculosis is not due to disease in the mastoid, but is caused by the movement of the meatus which results from the pressure on the soft part behind the ear, since this movement of the meatus produces compression of the inflamed area about the furuncle, and in such doubtful cases, if one takes care to employ pressure without giving any movement to the meatus, no pain whatever is elicited. Of course in many cases the furuncle can be easily seen. It is usually possible in mastoid disease to manipulate the auricle without causing pain, while in cases of furunculosis, the slightest movement of the auricle is painful.

Pain in the mastoid, apart from tenderness is a symptom that is not very constant. In some cases pain is the chief symptom, while in others it is slight or entirely absent. If present, it is of great value but its absence is not of much import.

Œdema of the soft parts behind the auricle is often seen, but it is usually a late symptom and we must not wait for it. If present in any marked degree it usually indicates operation, but this is by no means always the case. Of course, if there is a definite abscess behind the ear, operation is unavoidable, but where there is simply œdema, we can still bring about resolution in a certain number of cases. Œdema is perhaps as much a symptom of furuncle in the posterior part of the meatus as it is of mastoiditis.

Prolapse of the postero-superior wall of the meatus if present is an indication for operation. It is by no means a common symptom. It is produced by an extension of the inflammation in the underlying bone into the soft parts.

The persistence of an excessive quantity of purulent discharge is strongly indicative that operative interference will be necessary. The cavity of the middle ear is of very small size and therefore it is physiologically impossible that any large quantity of pus should be produced in it, so that if a large quantity of pus is coming from the meatus, it must be coming not only from the middle ear, but from somewhere else, usually from the mastoid cells.

Elevation of the body temperature is usually found in cases of mastoiditis, but is not a symptom which gives us much help. In the first place, many mastoid patients are suffering from some general disease which of itself gives rise to temperature, such as influenza, the exanthemata, and typhoid, to mention a few examples.

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Then again the height of the fever by no means bears a constant relation to the severity of the disease in the mastoid. Many very serious cases show very slight elevation of temperature. For instance in a case operated on some little time ago the temperature during a period of four days previous to the operation did not go higher than 99° and yet on opening the bone the whole process was found to be full of pus and necrotic bone and granulations, while the lateral sinus and dura mater were both lying exposed. If you have other symptoms, such as tenderness, pain, etc., the presence of an elevation of temperature strengthens the diagnosis. Great variation in temperature or persistent high temperature suggests not mastoid disease, but sinus thrombosis or meningitis, respectively. On the whole then the presence of a moderate elevation of temperature would be corroborative evidence, but its absence by no means is to be regarded as a proof that the mastoid is intact.

Of eighty-nine cases of mastoiditis on which the simple mastoid operation was performed in the General Hospital in the last three years the temperature on admission was as follows:

Not over 98-3|5° F.	Not over 100° F.	Over 100° F.
27—30 per cent.	30—33 per cent.	32—35 per cent.

Or adding the first two columns together, 63 per cent. showed a temperature not over 100° F.

In most cases we have more than one of the above symptoms and here of course the diagnosis is more easily made.

It is hardly necessary to give you the reasons why mastoid disease should be recognized early and given proper treatment, but perhaps a very brief *résumé* will do no harm.

Its anatomical relations are such that when it is the seat of suppuration there is only one direction in which the pus can safely go, that is outward or laterally. Above lies the brain, while the lateral sinus is behind as is the cerebellum. If the inflammatory process extends to the leptomeninges, death is almost certain. If an abscess is formed in the cerebrum or cerebellum, the chances for recovery are slightly better but the prognosis on the whole is very bad. If the lateral sinus becomes infected, the prognosis is still grave, though the chances for recovery are much better than in cases of abscess. I have seen many cases of otitic meningitis, far too many, and I have operated on three, one of which recovered. I have operated on four cases of brain abscess with one recovery, and on six cases of sinus thrombosis, with two recoveries. Of

course early operation in cases of sinus thrombosis gives a much better chance for recovery.

As regards the treatment of mastoid disease, there is room for much improvement, especially in the way of prophylaxis, and in our efforts at prophylaxis we should begin at the root of the matter. We should try to prevent the occurrence and the recurrence of middle ear suppuration. This work is mainly in the hands of the family physician. In cases where there is inflammation of the nasopharynx, notably in such disease as influenza, measles, scarlatina, and diphtheria, the attendant should be instructed to use hot cleansing gargles, or to paint the nasopharynx or nostrils, or both, with 20 per cent. argyrol, etc., in order, if possible, to limit the severity of the inflammation. Then again in otherwise healthy children the occurrence of earache should not be neglected but should make one carefully examine the nose and throat, especially for the presence of adenoids and hypertrophied tonsils which in such cases should be removed.

When otitis media has already made its appearance we can very often hasten recovery and forestall possible extension to the mastoid or elsewhere by performing a paracentesis of the drum membrane. This is a very valuable procedure. If the drum membrane is bulging, or if it does not rupture early, even if it is not bulging, paracentesis should be performed. In those cases too where the existing perforation does not provide a sufficiently free exit, paracentesis is indicated. There exists among the laity, and even to some extent among the profession, a belief that once the drum membrane is ruptured, the patient's hearing is permanently impaired or even entirely destroyed. This idea, of course, is entirely erroneous. It arose, no doubt, from the fact that in ears which have a permanent perforation of the membrane the hearing is usually impaired but the impaired hearing is due, not to the perforation, but to the damage done by the suppuration which caused it. The wound made by paracentesis causes much less damage to the drum membrane than does spontaneous rupture, and is rather more apt to heal too soon than to persist too long. The paracentesis relieves the tension within the middle ear and does good by providing free drainage. As this operation is very painful, and also because it is difficult to estimate distance properly with one eye, as one is obliged to do in operations on the membrane, a general anæsthetic is to be given in all cases. I have found nitrous oxide gas very satisfactory for these cases, as it can be given without previous preparation of the patient, and is rapid, pleasant and safe.

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Even where actual mastoiditis is present we can often by proper measures bring about a cure without operation on the bone. The patient should be put to bed and given a free purge, the membrane should be incised, if good drainage is not already established, and the ear should be syringed out with hot boric acid solution every two hours, while cold should be applied to the mastoid by means of a Leiter's coil. In many cases such treatment will stop the inflammation and lead to cure. The percentage of cases which can be thus aborted varies with the epidemic, but I should say 50 to 75 per cent. of cases, if treated early, can be aborted.

If tenderness still persists after twenty-four hours, treatment may be continued for another twenty-four hours, but by this time if there is no marked improvement, operation is necessary. If there is an abscess or a fistula over the mastoid when the patient is first examined, the use of this abortive treatment is out of the question, and operation is the only recourse. The same is true in those cases which present extensive prolapse of the postero-superior wall of the meatus.

With regard to the length of time after the onset of the middle ear suppuration at which serious mastoid involvement may occur great variations are seen. The majority of cases in my experience arise in from ten days to eight weeks. I have seen quite a number where operation was undertaken within a week of the onset of the middle ear trouble in which very extensive destruction had already taken place in the mastoid.

I have tried to get statistics as to the frequency with which mastoiditis complicates recent otitis media, but have not as yet been successful. Our hospital statistics are useless since most of the cases we see are the severe ones. From the statement of busy practitioners as to the rarity of mastoiditis among their patient's coupled with the fact that suppurative otitis media is a very common disease, and in the light of my own experience, I am inclined to think that the proportion is not greater than 1 to 500, and this is probably overstating it.

When mastoiditis has been diagnosed, how long should one wait before operating? I think that once one is sure that the disease cannot be aborted, operation should be undertaken at once.

In conclusion, bear in mind that the simple mastoid operation in skilled hands exposes the patient to very slight risk, while the evils which may result from extension of mastoid disease to the neighbouring parts are so great that in case of doubt it is infinitely better to operate, and thus settle the question on the safe side.

THE DIAGNOSIS OF TUBERCULOUS BRONCHIAL AND MEDIASTINAL GLANDS

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THAT the diagnosis of tuberculosis of the bronchial glands is made so infrequently is my excuse for presenting this paper. The condition is such a frequent one that we should hear the term used much more often than we do. Practically all children with tuberculosis have these glands involved. In many the infection is localized within these glands. If the diagnosis can be made in this stage much can be done to save the child from extension to other organs, and from a generalized tuberculosis.

Historical. Barthez and Rilliet in 1843 wrote,"*La tuberculisation des ganglions thoracicques n'a été bien étudiée que dans ces derniers années.*"[1] The history of observations on the condition was included in a thesis by Becker,[2] published in Berlin in 1826. He refers to observations of Cruickshank, who drew attention to their presence in children dying of scrofula, of Camper, who noted their association with pulmonary phthisis, and of Wrisberg, who reported a child in whom the much enlarged glands had compressed the pneumogastric nerve. Senac and de Haen pointed out the presence of calcareous nodules in these glands in infants. Two years before Becker, Leblond,[3] in his thesis, made a notable contribution to the subject.

Louis, in his first edition (1825), scarcely mentions involvement of the bronchial lymphatic glands, but in his second edition (1843)[4] mentions its frequent occurrence, and that in children they are more frequently involved than are the lungs. Laennec (1826) refers to the common occurrence of cretaceous matter and tubercles in the bronchial glands, and devotes a short chapter to their diseases. Clarke devotes several pages to a consideration of the disease under the name of infantile consumption. He considered that the diagnosis should be made when one found a child showing hectic fever, cough, loss of weight, if careful examination revealed no changes in the lung or the mesenteric glands.[5] Later, Eustace Smith

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wrote extensively upon the subject, paying special attention to symptoms and physical signs.

In more recent years there have been many valuable contributions to the subject, more especially pertaining to methods of diagnosis through percussion, auscultation and the use of the *x*-ray, while the symptomatology has been rather better defined. Our gross pathology and studies of the incidence of the disease have been added to but little during the past fifty years, though the use of the tuberculin test has been of much help in the differential diagnosis.

Anatomy. The visceral lymphatic glands within the thorax are very numerous. They are usually divided into three main groups; (1) an anterior group, situated in the anterior mediastinum; (2) a posterior group in the posterior mediastinum; (3) a central group, situated about the lower part of the trachea and the divisions of the bronchi, extending into the lungs.

1. The anterior mediastinal glands occupy its upper portion. There are from four to six glands in front and above the transverse arch of the aorta. The efferent vessels from these run upwards, following smaller chains towards the junction of the internal jugular and subclavian veins, joining here the descending chains from the cervical lymphatics.

2. The posterior mediastinal glands are scattered around the œsophagus, usually on its anterior surface, behind the pericardium.

3. The central group, which we may designate the bronchial glands, fall into five main groups:

(a) and (b). Those in the angle between the trachea and the bronchi, right (four or five in number) and left (three or four, and smaller).

(c) An inferior group, in the angle between the bronchi, below the bifurcation (ten or twelve in number).

(d) and (e). The right and left interbronchial glands, occupying the angles of division of the bronchi, down as far as divisions of the fourth order. These are sometimes called pulmonary glands; they are situated deep in the pulmonary tissues.

The deep lymphatic vessels of the lung form a net work around the alveoli, follow the vessels and bronchial tree, terminating in the pulmonary lymphatic glands, which are situated along the walls of the smaller bronchial tubes and in the angles of their divisions, about forty in the right lung and thirty in the left. The efferent vessels from these glands join with the superficial lymphatic vessels and end in the central group of glands, which are clustered about

the roots of the lungs and lower portion of the bronchi and trachea. Those from the right pass through the mediastinal glands to the right lymphatic duct, those from the left side join the thoracic duct.

Frequency of Involvement. It is generally acknowledged that all children who are tuberculous have tuberculous bronchial glands. In Canada over two thousand five hundred children die of tuberculosis each year. How many thousands have it without fatal termination, we do not know. No extensive studies have been made in Canada as to the extent of tuberculosis in children. In the European cities infection is rife; from the fourth to the eleventh year over half are tuberculous. Of nine hundred and twenty children dying from all causes in a Paris hospital five hundred and thirty-eight, or nearly 60 per cent., showed gross tuberculous lesions at autopsy. Tuberculosis of the bronchial glands is then a disease which must be considered when there has been known exposure, or in children who have chronic cough or ill health without apparent cause.

Pathology. We can best understand what changes take place in the bronchial glands, and the effects upon surrounding viscera, if we recall the changes we so frequently see in the cervical lymphatics, which are more accessible for observation. We may have all stages of tuberculous disease, discrete or conglomerate tubercles, caseation with little or much swelling, calcification, or rupture and discharge of the contents of the gland, with healing and chronic sinus formation. The glands may rise and fall in size with inflammatory conditions of the mucuous membrane of the bronchi and alveoli, causing pressure symptoms which are later relieved. The glands will at times increase in size to that of a pigeon's egg or even a hen's egg.

We may have mixed infection complicating tuberculosis.

These glands are the true centres of infantile tuberculosis, from which the disease may extend in many ways, by direct spread into contiguous pulmonary tissue, by retrograde spread into the lungs, there being a peribronchitis preceding the pulmonary infection, caseation and rupture into a bronchus causing cough and expectoration, with perhaps a fistulous opening persisting with varying amounts of secretion, or by inhalation a caseous pneumonia may result. Again, the rupture may take place into the blood stream, causing meningeal or generalised tuberculosis, or if into a pulmonary artery a disseminated pulmonary tuberculosis may result.

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Symptoms. These fall into three groups: (1) Constitutional or toxic; (2) those due to pressure on neighbouring structures, (3) those due to adhesions to neighbouring structures with subsequent perforation.

The *constitutional symptoms* are those of a tuberculosis of the glands in any other situation, those long known under the term scrofula. The *pressure symptoms* may be various, but it is sufficient to recall that we may have slight or great pressure upon the trachea, upon either bronchus or its larger divisions, upon the aorta, superior vena cava, innominate vein, vena azygos major (terminal portion), pulmonary vessels, upon the pneumogastric nerve on either side, or upon the recurrent laryngeal branch, particularly the left, or other branches.

Pressure on the parenchyma of the lung may also result, and the œsophagus may be compressed. Rupture of a caseating gland may occur into a bronchus, the trachea or the lung; this is not uncommon. Rupture into a vessel perhaps accounts for miliary spread, for in practically all cases of meningeal and generalized tuberculosis, we find caseating bronchial glands. Some rare cases of fatal hæmorrhage have been recorded, as also rupture into the œsophagus, while rupture into the pleura has caused pneumothorax.

Toxic Symptoms. The onset is usually insidious, the toxic symptoms developing gradually and in irregular order, those most frequently met being loss of appetite, languor, disinclination to play, easily tired, irritable temper, diurnal drowsiness, anæmia, stationary weight or actual loss, one or many of these without obvious cause. Temperature observations should be made with due allowance for the higher normal temperature of children. It is often markedly irregular in character. Night sweats are at times a marked feature.

Pressure Symptoms. These will of course vary with the amount of pressure. Vagus pressure may cause cough and vomiting; if the recurrent branch is affected, hoarseness may be present, or even a recurrent laryngeal paralysis of the cord; sympathetic pressure may cause dilatation of the pupil on the affected side. Dysphagia in some cases has been due to pressure on the œsophagus. Pressure on the vessels may cause various symptoms from a partial stenosis.

The more common pressure symptoms are those referable to the bronchi, cough (or partly vagus), obstructed respiration, dyspnœa, asthmatic attacks, bronchitis. The cough will vary

with the many conditions which may produce it. A very typical cough is one which is paroxysmal and spasmodic in character, suggestive of that of pertussis, but rarely so prolonged or so severe. When no bronchial secretion is present it may partake of a dry brassy character.

Physical Signs. These include such changes as the following:

(a) Inspection. Anæmic and obviously out of health, a frail delicate child, though in many cases a child may be a picture of good health. Unilateral dilated veins may be present. Slight puffiness of the face and eyelids, due to venous obstruction, may be present. Unequal expansion of the apices is to be looked for, and unilateral or bilateral flattening and retraction.

(b) Palpation. Petruschky[6] has pointed out the occurrence of tenderness over the upper thoracic spines, more especially the fifth. Tenderness on percussion over the manubrium and costal cartilages is also suggestive. At times glandular enlargement may be made out by deep palpation in the suprasternal notch and behind the clavicle, the patient also being asked to cough.

(c) Percussion. Dulness over the manubrium may be due to enlarged glands, but the thymus may persist and cause the dull note. More valuable is percussion in the right, less so in the left, interchondral spaces, especially the first and second. This dulness is produced by enlargement of the anterior mediastinal group. Spinal percussion is of value. Normally the first to fourth thoracic vertebræ are dull on percussion, below this resonant. Dulness extending to the fifth and sixth is not normal, and suggests mediastinal tumour. Paravertebral percussion may show interscapular dulness from the second to the fifth dorsal spines.

(d) Auscultation. Bronchial breathing and bronchophonic voice sounds are to be looked for over the areas of paravertebral dulness. Stenotic murmurs may at times be present over one root or the lower lobe.

May,[7] Stoll,[8] and others have directed attention to the acoustic phenomenon described by D'Espine.[9] To elicit this the patient is asked to whisper "one, two, three," or "three, thirty-three," while the stethoscope is applied over the fourth, fifth, and sixth thoracic vertebræ; bronchophony is distinct, and one may hear the final "e" of the "three" prolonged for an appreciable time after the voice stops, or even hear the "three" as a disyllabic word; at times this may be heard as low as the eighth.

Weak breath sounds over the whole of one lobe, especially the right lower lobe, if persisting over several examinations, suggest pressure upon a bronchus.

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The systolic murmur described by Eustace Smith[10] heard over the manubrium sterni and below the jugular bulb, usually more marked with the head retracted, has long been considered pathognomonic, but it is heard frequently in children apparently well, and who are only anæmic, and therefore no reliance should be placed upon it.

Rales. Miller and Woodruff[11] consider the presence of crepitant *rales* in the fourth, fifth and sixth interspaces in the midclavicular line very suggestive of tuberculosis. These are not to be confounded with the crepitations so often present near the costal margin in the inferior axillary space, which may be due to atelectactic lung.

Lowman[12] has pointed out that there is a collateral inflammation of the bronchi in children with tuberculous bronchial glands, which is apt to be recurrent in the winter, persistent, characterized by general or localised moist *rales*, and the whole process gives rise to the impression that there has been invasion of the lungs. On the contrary this may clear up in a short time, often with a short residence in the country. With a history of tuberculosis in the home this clinical picture may be mistaken for a pulmonary tuberculosis, and he appeals for continuous observation of these cases as more important than percussion and auscultation in arriving at correct conclusions. These *rales* frequently recur at a point where a pulmonary tuberculosis may be highly improbable.

The x-ray. The use of the *x*-ray, either using plates or the screen, is extremely helpful. Increasing experience leads one to express the opinion that any extensive degree of glandular involvement can be diagnosed by the ordinary means of physical examination carefully applied, yet such a master of the art of physical diagnosis as Minor[13] has said he has found "that in diagnosis of tuberculosis of the bronchial glands the *x*-ray examination has gone ahead of any physical signs, and is the most reliable procedure at our command for the diagnosis of this condition." And he points out that this procedure also gives much information as to the progress of the infection from these glands into the substance of the lungs. Enlargement of the thoracic glands sufficient to throw a shadow on the plate, or to produce physical signs, may be due to other diseases, and a tuberculin test is desirable to assist in making a diagnosis.

Tuberculin Test. The von Pirquet reaction is the most useful. One must be careful in drawing deductions from its use in adults and older children. A positive reaction means the presence of

tuberculosis at some point. A negative reaction does not exclude tuberculosis. At the tuberculosis clinic at the Hospital for Sick Children, a number of cases of undoubted tuberculosis have not reacted. I am inclined to think it may be absent; (1) in some quiescent closed cases; (2) in some advanced active cases; (3) in certain other cases which for the present we may term refractory.

But in most cases in young children the von Pirquet test is a reliable guide to the presence of tuberculosis, yet it must be considered only in conjunction with our findings, established by all means of diagnosis at our disposal.

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FREE, SUPPURATIVE PERITONITIS DUE TO PYOSALPINX

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of Winnipeg

THIS article is not intended to do more than to give a brief history of a few cases in order to emphasize some special features. It is not proposed to discuss symptoms, diagnosis and treatment in all their bearings. One weakness lies in the fact that attempts at examinations of cultures miscarried in all except three cases. In future this serious defect must be remedied. The clinical and gross pathological features, however, probably have some value.

Case 1. Winnipeg General Hospital, No. 2021, 1908. Mrs L. B. Married about seven years. Two healthy children six and three years old. Not pregnant since. Called to see her May 12th, in the afternoon. She said she was taken suddenly ill in the forenoon. She now had quite evident general peritonitis, and a diagnosis of a ruptured appendix was made. An incision was made splitting the fibres of the external olbique and its fascia and cutting through the internal oblique. A large quantity of free pus was found. The appendix was somewhat adherent but was clearly not the cause of the trouble. It was removed. The pelvis was explored and pus was found oozing from both tubes, neither ovary being involved. A median incision was made to reach the left tube. The lateral incision was sewed up. Both tubes were quite free from adhesions and not at all distended with pent-up pus. Both tubes were removed. She left the hospital on the fourteenth day.

Case 2. Winnipeg General Hospital, No. 719, 1909. Miss G. C., stenographer. Patient has had considerable pain at menstrual periods for several years. On two occasions was ill enough to call a doctor. On one of these occasions is said to have had some temperature. On February 6th, she went to the office as usual, and was in her usual health. About an hour after arriving there she was suddenly seized with abdominal pain which completely incapacitated her. She was taken home. Seen by Dr. O'Neil at 2:30 p.m., when she was found with a temperature of 101°, and very marked rigidity of the lower abdomen, particularly on

the right side. We saw her together one and a quarter hours later when a diagnosis of general peritonitis was made, probably due to a ruptured appendix. Immediate operation was advised and patient moved to the hospital. An incision was made along the outer border of the right rectus, when pus oozed out freely. The appendix was practically normal and was not removed. The right tube was found oozing pus from the unsealed fimbriated extremity. The side of the tube was adherent to the ovary. There was no dilatation of the tube and no abscess cavity. The tube and ovary were removed. The left tube was brought far enough into the wound to demonstrate pus oozing from the unsealed fimbriated extremity. A new incision was made in the median line. The ovary was nearly normal. The tube was removed but the ovary was not. The quantity of pus in the abdomen was not large. Some coils of small intestine were quite inflamed, but others were nearly normal. The temperature on admission was 101·4° and pulse 120. By 8:00 p.m. the temperature was 97° and pulse 72. After this the temperature never went above 99·2° and pulse never over 96. She left the hospital on the seventeenth day.

Case 3. Winnipeg General Hospital, No. 1694, 1909. Mrs. J. F. R., no occupation. Patient was admitted April 21st, and died May 3rd. This patient had exposed herself to infection over a period of many years. She had no children and never was pregnant. First seen by us on admission to the hospital; referred by Dr. M. S. Inglis. There was evident pelvic infection with considerable discharge from the uterus. A swab taken from the uterine discharge showed a culture of streptococci. A swab from the vagina showed various bacteria but no gonococci. A swollen Bartholin's gland was incised and a culture showed streptococci. On April 22nd, the pelvis was drained through the vagina, a rubber tube being stitched in. She continued to get worse, and the abdomen was opened a few days later. Thin pus was absolutely general throughout the abdomen. Both tubes were in a chronically inflamed condition, and one of them had ruptured. The patient died on the eleventh day after admission. In this case a laparotomy should have been done at first. However, there were lacking the tenderness and rigidity usually found in the presence of pus free in the abdominal cavity.

Case 4. Winnipeg General Hospital, No. 1082, 1910. Mrs. G. R. P., housewife, married three years. Said menstruation had been regular. Was taken suddenly ill at 10:10 a.m., with pain, all in lower part of abdomen. Vomited several times. First seen

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by me in the evening. There was undoubted peritonitis and a diagnosis of ruptured appendix was made. She was removed to the hospital. An incision was made over the appendix and it was found normal. Pus was free in the abdominal cavity in large quantities. From both tubes pus was oozing from unsealed ends. The tubes were little larger than normal but inflamed. Both tubes were removed, but neither ovary. There were no adhesion. about the tubes or ovaries. Both incisions were drained in this case. She left the hospital on the sixteenth day, in good condition.

Case 5. Winnipeg General Hospital, No. 1364, 1910. Mrs. C. M., housewife, mother of five healthy children. She was seized with acute lower abdominal pain at 10:00 a.m., and in a few minutes was completely prostrated. When seen about an hour later, there was a most clearly defined general peritonitis. She had not menstruated for three months. Vaginal examination revealed a pregnant uterus, but no other mass in the pelvis. There was practically no dilatation of the os. At this time she was considerably shocked, temperature 102° and pulse 120. She had no upper abdominal pain whatever; there was vomiting from the moment the pain came on. A diagnosis of general peritonitis due to pus tubes was made, and she was moved to the hospital in about two and one-half hours. On the way she aborted in the stretcher, the foetus being found, when she came directly from the ambulance to the operating room. In spite of the abortion we immediately opened the abdomen in the median line. There was a large quantity of pus quite free and unconfined. Both tubes were somewhat enlarged and pus was issuing from the extremity of the left tube only, but no rupture was present. Both tubes were removed. The patient left the hospital on the fifteenth day in good condition.

Case 6. Winnipeg General Hospital, No. 1024, 1912. Miss J. E. R., nurse. Was called to see her at midnight, December 20th. She had had pain in the abdomen before rising that morning and was unable to work. Went to bed. Quite ill all day. Said her menstruation was always regular and normal. When first seen there was no doubt whatever about there being general peritonitis. There was more pain and tenderness on the right side than on the left. Here again a diagnosis of ruptured appendix was made. A lateral incision revealed an adherent appendix which, though not the origin of the very profuse pus, was removed. Again the tubes were found free from adhesions, not markedly enlarged, and, with pus oozing from the unsealed ends. The lateral incision

was closed after a median one was made. The tubes were both removed. The ovaries were not. In this case both from a smear and a culture streptococci were found, but no other organism. The patient was in the hospital eighty-five days.

CASE 7. Winnipeg General Hospital, No. 3996, 1912. Maggie B., no occupation. Had been in a hospital a year before with pelvic inflammation and refused operation. Had had a miscarriage before this time. Three days before entering the hospital this time she had some feelings of discomfort in the abdomen but went about as usual. About noon, while out on the street, she was seized with extremely severe abdominal pain and vomited. She fell in the street and was brought to the hospital by the police. The temperature was 103·2° and the pulse was 110. The abdomen was very rigid over the lower half. There was marked tenderness on vaginal examination and the pelvic organs were very fixed. A diagnosis of free pus in the abdomen due to ruptured pyosalpinx was made. Immediate laparotomy by median incision revealed both tubes involved. The right one was adherent to the ovary. Through a rupture of the tube, pus was escaping. The round ligaments were necrotic. The uterus we fixed to the abdominal wall. It should have been removed. The temperature dropped to normal the following day. She was discharged on the sixty-second day, having had a very slow and unsatisfactory convalesence.

CASE 8. Winnipeg General Hospital, No. 225, 1913. Miss A. K., no occupation. This patient was a Galician and could not talk English, so that we had to trust to the physical findings. The temperature on admission was 100° and the pulse rate was 120. She had a vaginal discharge of blood. There was marked pain in the lower abdomen and extreme tenderness and rigidity, most marked over the right side. Vaginal examination did not reveal anything particular; there was much less tenderness by vagina than over the abdomen. Immediate operation. The evident peritonitis was thought probably due to a ruptured appendix and the incision was made accordingly. The appendix was somewhat adherent chronically, but was clearly not the cause of the free pus found in the lower right quadrant. The right tube was found to be exuding creamy pus from the unsealed fimbriated extremity. The tube and the appendix were removed. The left tube was normal and was not removed. Neither ovary was involved. This case was wiped out and closed without drainage being the only one of the series to be treated by this method. In

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twenty-four hours the temperature was normal. The patient left the hospital on the fifteenth day.

CASE 9. Mrs. B., housewife, seen March, 1912. This patient lived in a country town, and I saw her on the fourth day of her illness. She was confined at full term, and labour was said to have been normal. Immediately after labour, however, she had a temperature of 100° and began having abdominal pain and distension. Vomiting soon began, but was not very pronounced. When seen by me there was very clearly a general infection of the abdomen. The temperature was 100° and the pulse ran from 120 to 150. Her face had a pinched look, and operation was not advised because she really did not look as though she would survive. She died two days later. A postmortem was not held. This case I regard as a pyosalpinx ruptured during labour.

CASE 10. Mrs. K. B., housewife. No children. Seen by me in consultation four days after confinement. Labour was said to have been normal. Immediately following labour she complained of lower abdominal pain. The usual peaceful slumber following the trying ordeal did not come to her. As time went on she became bloated and vomited somewhat. Abdominal discomfort was interpreted as the result of the bowels not moving; efforts to get them to move failed utterly. She ran some temperature, but not very high. Her pulse got rapid and thready. When seen by me she was in very bad condition. There was much fluid in the abdomen, and she looked like a seven months pregnant woman as far as the abdomen was concerned. She was in distress more than in pain. There was not much tenderness or rigidity of the abdominal wall. A diagnosis of general peritonitis was made. A general anæsthetic seemed clearly contra-indicated. Under the use of local anæsthesia the abdomen was drained and a very large quantity of thin pus ran all over everything. She died the following morning. No postmortem was held. This case is also regarded as one of pyosalpinx ruptured during labour.

CASE 11. Mrs. M., housewife. First confinement March 2nd, which was normal as far as delivery was concerned. Following this convalescence was normal, except for mastitis, which did not suppurate. She had indefinite pain in the abdomen at the end of five weeks after confinement, when I saw her for the first time. She had a normal temperature and normal pulse and had only a little discomfort over the right lower quadrant. There had been a question of a diagnosis of appendicitis but this we ruled out. Two weeks later I saw her again for the second time. There was

now a large mass to the right of the uterus, very easily made out by bimanual examination. She still had a normal temperature. She was removed to St. Boniface Hospital two days later and a large, right-sided pyosalpinx was found. The abdomen was not drained. She made an excellent recovery and left the hospital on the tenth day.

It is worth noting that in six of the ten cases where pus was free in the abdominal cavity, the fimbriated extremity of the tube was not sealed up. The pus was issuing from this unsealed end, and not from a rupture of an ordinary pyosalpinx. As Bonney suggests, there may have been agglutination of the tube which had been overcome by increased tension within the tube. Certainly it could have been nothing more than agglutination for there were no signs of adhesions, and no infolding of the fimbriæ. The operation in these cases consisted in removing the tubes and leaving in a rubber drainage tube, except in Case 8. Here the pus was wiped out and the abdomen closed completely. In the other cases no irrigation or wiping was done. We prefer the simple operation of removing or repairing the lesion which is the source of infection. Then put in a rubber drain and close the wound about the drain. No gauze packing or gauze wick was used in any of these cases. In all these cases, except No. 6, where the streptococcic infection was found, and in No. 7, convalesence was smooth and rapid, and ultimate recovery was practically perfect. Case No. 6 clearly had a considerable amount of intestinal adhesions following operation. However, there was no later pent-up collection of pus. A letter received just ten days before this meeting, says she is now in fair health and still improving, though she still has occasional intestinal cramps.

Cases 3 and 7 were in women who had exposed themselves to many kinds of infection over many years. No. 3 was well nigh moribund when seen. She died. No. 7 would most likely have died had she not, through past years, acquired an immunity to most ordinary organisms to which such women are exposed. Her convalesence would probably have been much smoother and more rapid had the pelvis been cleaned of all the organs. And when the wound healed she still had considerable pain.

Regarding the two cases diagnosed as pyosalpinx ruptured during labour, one is inclined to think these cases must be spotted early and must be operated on as soon as diagnosed. Both cases were beyond operative assistance when seen. One grants without argument that little could be hoped for in Case 10 by merely drain-

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ing the abdomen. In the light of present knowledge, if similar cases present themselves in the future, provided they are seen early enough, a laparotomy will be done, and the uterus, tubes, and ovaries removed.

One striking feature of Case 11 was that the pelvic veins were the size of one's little finger and were thrombosed for four or five inches from the broad ligament. We have never seen such large veins in any other pelvic case. This case is cited because she seems to have escaped, by mere chance, the fate of the two cases just mentioned. We are inclined to think that the condition was made much worse by labour, though she luckily escaped rupture. If pyosalpinx can be diagnosed before, say, the sixth month, removal at that time would be much to be preferred to letting the woman take a chance on labour. As to what to do if diagnosis is made during the last two and a half months, that is a difficult question.

Case 13. After this paper was completed, another case went into St. Boniface Hospital, June 17th, 1913. Mrs. H., married eight years. One premature birth at 8 months, seven years ago. Miscarriage at 3 months, three years ago. Has not been pregnant since. She said she has had much pelvic pain during last six years; first on the left side, and later on the right side. When first seen with the present illness, she was too sick to go much into past history. Her husband admits having had gonorrhœa. The present illness began about 9 p.m., June 16th, with generalized pain in the abdomen. When seen by Dr. Bruce Hill, the abdomen was not specially tender to the touch, nor was there rigidity. At 11 p.m., i.e., only two hours later, she was seized with agonizing pain in the abdomen. She was in great pain all night. She did not vomit. They did not call Dr. Hill till next forenoon, and she was at once removed to the hospital where I saw her at 1 p.m., for the first time. The temperature was then 101°, the pulse 120, and the respirations about 40. The respirations were exactly like those occurring in diaphragmatic pleurisy. She was in intense pain, referred chiefly to the region of the diaphragm and liver. The abdomen was as much like an oak plank as any I have ever seen. One simply could not get through the wall by palpation. The case was diagnosed as general peritonitis, due to leaking pus tubes. An incision was made in the median line. The appendix was slightly adherent. There was general redness over all peritoneal surfaces. There was a little pus amongst the coils of intestine. There were no adhesions anywhere in the pelvis, or amongst the coils of

bowel. Both tubes were slightly enlarged in the middle and each was leaking thick, creamy pus from the wide open fimbriated extremity. A swab was taken from the general peritoneal cavity, and one from the right tube. Both tubes were removed, but neither ovary. A split rubber tube was left draining the pelvis behind the uterus, and the wound closed about it. When I left the city she was doing very well. She said, quite positively, that the first twenty-four hours after the operation were decidedly more comfortable than the last twelve hours before it.

THE following candidates have passed the final examinations of the College of Physicians and Surgeons of Ontario; S. L. Alexander, Cavalier, North Dakota; F. C. Anderson, Kingston, Ontario; H. H. Argue, Shawville, Quebec; W. H. Birks, Dundas; C. A. Brisco, Chatham; F. A. Brockenshire, Talbotville, Ontario; A. B. Brodey, Toronto; C. P. Brown, Paris; L. L. Buck, Kepler; J. F. Burgess, Owen Sound; J. A. Campbell, Belmont; J. P. Selby, Courtright; K. E. Cooke, Binbrooke; T. D. Cumberland, Rosemount; C. L. Douglass, St. Thomas; R. O. Frost, Kinmount, Ontario; R. W. Glidden, Union; T. J. Glover, Toronto; G. G. Greer, Peterboro; A. A. Halliday, Chesley; E. R. Hastings, Stouffville; W. J. Hicks, Kara; G. L. Hodgins, Lucan; B. R. Keller, Wallacetown; W. D. B. Leitch, South Edmonton, Alberta; F. J. Livingston, Hamilton; A. F. MacAulay, South London; J. L. Mahoney, Stamford; T. A. Malloch, Hamilton; R. M. Maraud, Windsor; J. K. Mossman, Petrolea; A. E. McCullough, Greenbank; T. H. McKillip, Toronto; W. F. MacKnight, Ingle; W. S. Otton, Leamington; R. C. Phelps, Merritton; S. A. Richardson, Wallaceburg; H. P. Robinson, Kleinburg; T. M. Savage, Guelph; R. R. Scott, Perth; H. A. Snetsinger, Colborne; G. N. Urie, Deloraine, Manitoba; C. K. Wallace, Kemptville; F. M. Walker, Stony Creek; Edward White, Windsor; J. H. White, Ottawa; Arthur Windsor, London; L. R. Yealand, London.

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Editorial

THE LONDON MEETING

THE forty-sixth annual meeting of the Canadian Medical Association was held in London, Ontario, from Tuesday to Friday, June 24th to 27th. On three previous occasions the association had met in London, namely, in 1879, 1893, and 1903.

From every point of view the meeting was most successful. The total registration was three hundred and eighty-two, a figure which has only once been surpassed; indeed, the number of those who travelled to the meeting was considerably greater than in any previous year. Owing partly to the geographical position of London and to the distinguished Americans who contributed to the programme, we were favoured with an unusual number of visitors from the United States.

The entertainment provided by the local committee was all that could be desired, and was not allowed to interfere, as on some former occasions, with the serious business of the meeting.

The general meetings at which the formal addresses were read were open to the public, who availed themselves in considerable numbers of the privilege. The presidential address and the address in surgery were published and commented upon in the July number of the JOURNAL. It was evident at the meeting that the views expressed by the President met with the hearty approval of his audience.

Speaking as one zealous for the honour of the profession, he pointed out defects and advocated reforms. His trenchant remarks on the methods of the manufacturing chemist were corroborated by Dr. Billings at his clinic on the last morning

of the meeting, when, in speaking of the treatment of arthritis, he warned his hearers against the uncritical use of the many vaccines put upon the market by the drug houses. Undoubtedly a federal department of health, and a board of scientific censors such as is advocated by Dr. McCallum, would do much to protect physicians as well as laymen from their own credulity.

Dr. McCallum's experience and reputation as a teacher lends great weight to his criticism of the overcrowded curriculum. Whether or not an attempt is made to teach more science than can reasonably be assimilated in so short a time, there is no doubt that the student learns too little of the *art* of medicine, and that he should receive more instruction in practical therapeutics, particularly in the physical, mental, and nutritional forms of healing. Among other reforms the President recommended the establishment of a non-teaching college for the conferring of higher degrees in surgery and other specialties, on the model of the Royal Colleges of the Old Country. When this project was discussed at a subsequent executive meeting, it was generally considered that such an institution is a desideratum. The college recently constituted in Washington aims at being international and includes a generous proportion of Canadians on its governing board. Some were of the opinion that this foundation adequately provides for the needs of our surgeons, at any rate for the present. Others, however, hold that it is derogatory to our dignity as a nation that those who desire to take higher degrees should have to seek them in London, Edinburgh, or Washington. Provision was made for a committee to study the question. Dr. McCallum is its chairman, and the matter could not be in better hands.

The addresses in medicine and gynæcology, which appear in this issue of the JOURNAL, were given by two distinguished Johns Hopkins professors, whom we are proud to claim as Canadians.

Dr. Barker's address dealt with the clinical significance

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of the autonomic nerves supplying the viscera, and their relations to the glands of internal secretion, a subject which is as new as it is illuminating. Moreover, it was admirably presented, being spoken extemporaneously, and illustrated with lantern slides. It gave one a new conception of the mutual relations of the sympathetic and central systems in the innervation of the viscera, and outlined a practical method of studying these relations in the individual patient.

It was fitting that Dr. Cullen should take cancer as the subject of his address, for it is one that he has made his own. He told of the work of the Cancer Campaign Committee in the United States, and of the propaganda carried on under its direction in the lay press for the early recognition and cure of cancer. His suggestion that our association should appoint a similar committee, is well worthy of consideration. Dr. Cullen showed how important it is that every operating clinic should have at its immediate command the services of a highly trained—and well paid—surgical pathologist; and he also advocated more business-like methods in the management of hospitals and the keeping of case records.

A feature of the meeting was the presentation of the decidedly unfavourable report of the Committee of the Association for the Prevention of Tuberculosis on the cases treated in Canada by Dr. Friedmann. The report is printed elsewhere in this issue. Dr. Adami prefaced the reading of it by briefly outlining the events leading up to it.

There was one disappointment, the unavoidable absence of our honorary president, Dr. Roddick. It had been hoped that he might be present in person to receive a visible token of the gratitude of our association in the shape of an engrossed copy of the resolution which was passed at the Edmonton meeting, making him our honorary president for life. Dr. MacKid, on behalf of the committee which had arranged the presentation, explained that their plans had been frustrated by the fruits of Dr. Roddick's own good

works, and read a telegram which had been received by the president from Dr. Roddick, expressing his regrets that, owing to the fatigue induced by the constant strain of the long meeting of the Dominion Medical Council in Ottawa the previous week, he found himself physically incapable of undertaking the journey to London. He also expressed his thorough appreciation of the great honour that the members of the Association had done him, assuring them that he had received no distinction which he valued more highly than this. Another name which was remembered with gratitude in this connexion was that of the minister of the interior, the Honourable Dr. Roche. At a previous session a resolution was passed expressing appreciation of his valuable assistance in the establishment of the Dominion Medical Council.

A tribute was also paid to an honoured veteran whose distinguished presence and fluent oratory have graced no less than forty-three of the forty-six annual meetings. A resolution of the Executive Council making Sir James Grant an honorary member for life, was enthusiastically approved.

We would call our readers' attention to the reports of committees and sections which are published in this issue. The report of the Finance Committee shows the finances of the Association to be on a satisfactory basis. The work of the Committee on Medical Inspection of Schools will hereafter be taken up by the Section on Public Health, and we take this occasion to congratulate the committee on the three excellent reports which they have issued.

The work of the sections was unusually well conducted. The programme was excellent, and if in some sections it appeared to be too extended, in reality, by dint of opening the sessions promptly at the appointed time, it was completed in every instance. The symposia on diseases of the stomach and of the thyroid, conducted by the combined sections, were unusually interesting and instructive. A special section on *x*-rays was an experiment which justified

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itself, the sessions being attended by some twenty members. Another innovation this year, and one which was very much appreciated, was the extending of the meeting to four days, the last day being taken up by a clinic conducted by Dr. Billings, of Chicago, and a lantern demonstration on diseases of the bones and joints by Dr. Murphy, of Chicago.

It was decided that St. John, N.B., should be the next place of meeting, and Dr. Murray MacLaren was chosen as the president-elect.

In conclusion, on behalf of the Association, we offer our thanks to the president, Dr. McCallum, the local secretary, Dr. Beal, and all the London members, for the work of which this most successful meeting was the result.

A MEDICAL COMMISSION FOR ONTARIO

ON the occasion of the opening of the new General Hospital in Toronto, Sir James Whitney, in a twenty minutes' speech, discussed the subject of medical education in Ontario and made the announcement that a Royal Commission would deal with it at an early date, as the government was tired of receiving requests for further legislation from all sorts of "pathies" and faiths. He seemed to think that the Commission remedy, which has become a most popular treatment for many of the ills the province has been heir to, would prove effectual, although Mayor Hocken, in his speech a few minutes afterward, jokingly expressed the hope that Sir James Whitney would remain in power the necessary number of years to receive the report of this Commission.

To thoughtful members of the medical profession, the suggestion of the appointment of a Medical Commission just at the moment when the Dominion Council has launched itself, gives a good deal of concern, the fear being that politics, rather than the highest interests of medical education, may

receive too much recognition. The claims of the osteopaths, preposterous as they are, appeal to many men supposed to be intelligent, and it is morally certain that no stone will be left unturned by them in order to get recognition. If, on the other hand, Sir James Whitney establishes a Commission made up of men of the highest type, who know the situation and who are likely to back up the medical council and the universitites in their endeavours to make medical education in Ontario worthy of that great province, good will result, and the atmosphere will be cleared for years to come. We would humbly suggest that there is but one way to bring about the desired result, that is, establish a high standard and make all "pathies" and faddists conform to this standard. It is a simple matter to answer the query, how many of the "pathies" would remain if this rule were adopted? The eclectics have disappeared, the homœopaths are almost extinct, and the osteopaths, chiropractors, faith healers, and other peculiar sects will cease to exist just as soon as they are forced to spend five years in study and pass examinations of the stringent kind. Under these conditions very few will be anxious to remain under the shelter of the charlatan banners. Scientific medicine has no apologies to offer for its existence and any government failing in its duty to uphold it will be guilty of interfering with the best interests of the public it serves.

TORONTO GENERAL HOSPITAL

THE formal opening of the new Toronto General Hospital by the Lieutenant-Governor of Ontario, Sir John Gibson, on Thursday, June 19th, was an occasion on which those who have worked so faithfully to ensure for Toronto adequate and efficient hospital facilities may well be congratulated. The hospital comprises in all eleven buildings, connected by corridors but sufficiently segregated to avoid any probabil-

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ity of cross infection, placed on grounds nine acres in extent. It can accommodate six hundred and seventy patients and it is the result of the wise and thoughtful expenditure of three million and a half dollars. The first hospital, a temporary structure, was built in Toronto, then York, in 1812, and an interesting account of the subsequent hospital development is given by Dr. C. K. Clarke, the superintendent of the present institution, in his book entitled "A History of the Toronto General Hospital." In 1818, a permanent building was constructed, and about 1820, a two-storey red brick building was erected at the corner of King and John Streets. In 1854 came the cholera epidemic and a frame structure was then put up on the Gerrard Street property. The present building is indeed a wonderful outgrowth of these simple beginnings. The surgical building and its equipment is the gift of Mr. J. C. Eaton; the outpatients' building was given by Mr. Cawthra Mulock; and the emergency building, with its equipment, was given by the late Misses Agnes and Jane Shields. On behalf of Toronto University, and in consideration of the opportunities for research and study available to students of the university, the provincial government has contributed six hundred thousand dollars to the new institution.

We are publishing elsewhere in this issue the unfavourable report of the Committee of the Canadian Association of the Prevention of Tuberculosis on the results of the Friedmann treatment. The Board of Health of New York, at a meeting held on May 29th, passed a resolution prohibiting the use of living bacterial organisms in the inoculation of human beings for the prevention or treatment of disease "until after full and complete data regarding the method of use, including a specimen of the culture and other agents employed therewith, and a full account of the details of preparation, dosage, and administration shall have been submitted to the Board

of Health, and until permission shall have been granted in writing for the use of the same." This action was taken on the grounds that a so-called remedy for tuberculosis, which was being exploited in the city, "not only does not fulfil the promise of efficiency and safety under which its use was at first permitted in this city, but, on the contrary, during its administration many patients have suffered serious and unduly rapid progress of their disease." Provision, however, has been made for patients whom Dr. Friedmann himself had inoculated to continue the treatment at certain specified hospitals, and under the supervision of the Board of Health.

BULLETIN No. 255 of the Laboratory of the Inland Revenue Department contains a report upon seventy-three samples of sweet spirit of nitre. Of these samples, forty-one were found to contain the legal amount of ethyl nitrite, while thirty-two contained less than the minimum quantity permitted by the British pharmacopœia. Similar findings have resulted from two other examinations of samples of this drug, undertaken in 1908 and in 1911, the percentage of adulteration being respectively, 63, 43, and 44. The minimum amount of ethyl nitrite required by the British pharmacopœia is one and three-quarters per cent. by weight. Of the samples recently examined, 44 per cent. contained less than this amount, 30 per cent. contained less than one per cent., and fourteen less than one-half of one per cent. of ethyl nitrite, while nearly 9 per cent. contained none at all. The opinion is expressed in this report that the responsibility for the quality of the drug should rest with the vendor and that druggists should be made to realize their responsibility in dispensing drugs which are, by their failure to meet the required standard, a serious handicap to the physician employing them. Further it is suggested that, if it is not possible for physicians to obtain this drug in such condition as the pharmacopœia demands, either it should be removed from the pharmacopœia altogether or the physician employing it should do so with full knowledge of its uncertain results.

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For some weeks past the medical corps of Nova Scotia has been camping at Sussex, New Brunswick, under the command of Major F. S. L. Ford, M.D. A feature of particular interest is the clearing hospital, which is a new departure. These hospitals were organized last March to take the place of the two general hospitals formerly maintained. It is the intention, ultimately, to establish eight of these clearing hospitals in the Dominion. The medical corps is divided into three sections: the collecting zone, including the field ambulances; the evacuating zone, where the patients receive attention and, if necessary, are sent to the hospital; and the hospital, which consists of a large tent containing twenty-five beds, an operating tent, a dental tent, and a lecture tent wherein instruction is given in first aid. There is also a dispensary and a field and surgical equipment. Thus the immediate needs of the field are met efficiently and any overcrowding of the wards of the hospital is prevented.

A report of the United States War Department gives a gratifying account of the efficacy of antityphoid inoculation. During the previous ten months there had been only twelve cases of typhoid and two deaths among the 57,000 men composing the army. These deaths, as well as most of the cases of sickness, were of men who had not been inoculated. The typhoid rate in the army has fallen from 5·66 per thousand in 1906, and 2·32 in 1910, to 0·18 in 1912. These results cannot be accredited to improvement in the conditions of service. Such a well proved prophylactic might well be extensively used in the large railway construction camps and lumber districts of Canada. One of our colleagues in charge of a lumber district in Saskatchewan writes that he has made a hundred antityphoid inoculations, and hopes to make five hundred more. He adds that the men come and ask to be inoculated, whereas compulsory vaccination, which had previously been rendered necessary by an outbreak of small-

pox, "required a lot of help from the police." Much of the typhoid in the prairie provinces has been traced to the labourers who are brought out to harvest the crops, and it is interesting to learn that the Commissioner of Public Health of Saskatchewan, has written to the boards of health of the eastern provinces, asking that, as far as possible, the harvesters who come to the west be previously inoculated with anti-typhoid vaccine. The Saskatchewan Bureau of Health distributes the vaccine gratis to medical men in the province who make application for it.

Dr. Thomas Kirkpatrick Monro, professor of medicine at St. Mungo's College, Glasgow, has been appointed professor of the practice of medicine at the University of Glasgow, in place of the late Professor Samson Gemmell.

At the recent annual meeting of the Association resolutions were read expressing grateful appreciation of the services of Dr. Small and of Dr. Archibald, who resigned their offices last year. These resolutions are printed elsewhere in this issue. Dr. Small had been treasurer for no less than nineteen years, a fact which of itself bears witness to his devotion to the interests of the Association. The two years of Dr. Archibald's tenure of office as general secretary saw the establishment of the Journal and the re-organization of the Association on a basis of permanent membership. These results were not achieved without great labour, and it was naturally to the secretary that a large share of the work fell.

An Institute of Hydrology and Climatology has been established at the École Pratique des Hautes Études at Paris. The purpose of the institute is the study of scientific or applied problems relating to mineral waters and climatology, and to make public the results obtained from either the medical or the scientific point of view.

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An analysis has been made recently of the water from three springs in the Sinclair Pass in British Columbia, sixty miles south of Golden. These waters have been known for some time to possess curative properties in gout, rheumatism, and certain skin diseases; but, in addition to this, they show a radio-activity which, so far as is now known, is unequalled and should prove of great therapeutical value. It is believed also that radium-bearing earths occur in the neighbourhood of these springs.

The fortieth annual convention of the United States Hay Fever Association will be held at Bethlehem, New Hampshire, August 28th and 29th. The object of the association is to seek information which will relieve sufferers from this unpleasant affliction and the last annual report contains some interesting information concerning the cause and treatment of the disorder.

The secretary of the Saskatchewan Medical Association reports admirable progress in the scheme of organization which the Canadian Medical Association has in view, viz: the affiliation of county and town societies with their respective provincial associations. During the past year seven local medical societies have been affiliated with the Saskatchewan Association, namely those of Regina, Moose Jaw, Saskatoon, Battleford, Prince Albert, Wynyard, Swift Current. The secretaries of these societies are, respectively, Drs. W. A. Dakin, G. B. Bawden, T. W. Walker, Stanley Millar, T. W. Fourney, H. R. Ross, R. A. Hughes.

Book Reviews

MASSAGE. MANUAL TREATMENT REMEDIAL MOVEMENTS: HISTORY, MODE OF APPLICATION, AND EFFECTS; INDICATIONS AND CONTRAINDICATIONS. By DOUGLAS GRAHAM, M.D., with a chapter on MASSAGE OF THE EYE, by DR. A. DARIER, Paris. Fourth edition, revised and enlarged, with 75 illustrations. Philadelphia and London: J. B. Lippincott Company, 1913.

Dr. Douglas Graham is a pioneer in America, at least, in the use of massage as a remedial measure. As long ago as 1884 he published a book upon the subject. At various times it has been revised and now assumes the present form, namely, a large volume of nearly six hundred pages, beautifully printed and illustrated. It is written by one who is a physician and a masseur. The history which Dr. Graham gives is most valuable and he has searched the literature of the ancients to demonstrate that the practice was universal. The various methods employed are described in detail, and the physician will find in the book indications for treatment as well as a description of the methods to be employed.

IONIC MEDICATION. THE PRINCIPLES OF THE METHOD AND AN ACCOUNT OF THE CLINICAL RESULTS OBTAINED. By H. LEWIS JONES, M.D. Price, 5s. net. London: H. K. LEWIS, 1913.

Ionic medication is comparatively a new thing, and information upon the method and its value has not been easily accessible. This volume is offered to the medical profession so that this want may be supplied. Dr. Lewis Jones gives a complete record of the clinical results which have been obtained by this method, and he brings evidence to show that the practice is a real addition to our means of treating disease. The best results have been obtained in superficial affections, and the author warns the profession against overconfidence in trying for results in the more deep-seated affections. But, as he says truly, there are still plenty of conditions in which the present methods of treatment admit of improvement. He protests, quite properly, against the indiscriminate uses of ionic medication by incompetent persons. Any new method of treatment is sure to be exploited by ignorant or dishonest persons, and always to the grief of the patient. The book is a succinct record of the situation as it is discovered at the present moment.

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Books Received

THE following books have been received, and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

A TREATISE ON THE MINERAL WATERS OF VICHY. For the use of Practitioners. By CHARLES COTAR, M.D. With foreword by VAUGHAN HARLEY, M.D. Price 4s. net. London: H. K. Lewis, 1913.

MEDICAL ELECTRICITY. A Practical Handbook for Students and Practitioners. By H. LEWIS JONES, M.A., M.D. Sixth edition; illustrated; price 12s. 6d. net. London: H. K. Lewis, 1913.

A REFERENCE HANDBOOK OF GYNECOLOGY FOR NURSES. By CATHARINE MACFARLANE, M.D. Second edition. Price $1.25 net. Philadelphia and London: W. B. Saunders Company, 1913. Canadian Agents: The J. F. Hartz Company, Limited, Toronto.

DIET LISTS OF THE PRESBYTERIAN HOSPITAL, NEW YORK CITY. Compiled, with notes, by H. S. Carter, M.D. Price, cloth, $1.00. Philadelphia and London: W. B. Saunders Company, 1913. Canadian Agents: The J. F. Hartz Company, Limited, Toronto.

APPLIED BACTERIOLOGY FOR NURSES. By CHARLES F. BOLDUAN, M.D. and MARIE GRUND, M.D. Price, cloth $1.25 net. Philadelphia and London: W. B. Saunders Company, 1913. Canadian Agents: The J. F. Hartz Company, Limited, Toronto.

DISEASES OF THE EYE. By G. E. DESCHWEINITZ, M.D. Seventh edition; illustrated. Price, cloth, $5.00 net; half morocco, $6.00 net. Philadelphia and London: W. B. Saunders Company, 1913. Canadian Agents: The J. F. Hartz Company, Limited, Toronto.

FOOD AND FEEEDING IN HEALTH AND DISEASE. A Manual of Practical Dietetics. By CHALMERS WATSON, M.D., F.R.C.P.E. Second edition. Price $5.00. Toronto: D. T. McAinsh & Company, 1913.

HEADACHE. ITS VARIETIES, THEIR NATURE, RECOGNITION AND TREATMENT. By DR. SIEGMUND AUERBACH. Translated by E. PLAYFAIR, M.R.C.P. One of the Oxford medical manuals. Price, $1.50. Toronto: D. T. McAinsh & Company, 1913.

DISEASES OF THE EAR. By PHILIP D. KERRISON, M.D. Illustrated. Philadelphia, London and Montreal: J. B. Lippincott, 1913.

CLINICAL ELECTROCARDIOGRAPHY. By THOMAS LEWIS, M.D., D.Sc., F.R.C.P. London: Shaw & Sons, 1913.

LEWIS'S POCKET CASE BOOK. Designed for the Use of Students and Practitioners. Price, 1s. 6d. net. London: H. K. Lewis, 1913.

COLLECTED PAPERS FROM THE RESEARCH LABORATORY OF PARKE DAVIS AND COMPANY, Detroit, Michigan. Volume I.

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE. Volume VI, No. 7, with supplement, May, 1913. London, New York, Calcutta and Bombay: Longmans, Green and Company.

SEX. ITS ORIGIN AND DETERMINATION. By THOMAS E. REED, M.D. Price, $3.00. New York: Rebman Company, 1913.

A COURSE IN NORMAL HISTOLOGY. By Rudolf Krause. Translated by P. J. R. SCHMAHL, M.D. Volume I, price, $0.75; Volume II, price, $5.50. Illustrated. New York: Rebman Company, 1913.

THERAPEUTICS OF THE GASTRO-INTESTINAL TRACT. By DR. CARL WEGELE. Edited by M. H. GROSS, M.D., and I. W. HELD, M.D. Illustrated; price, $3.00. New York: Rebman Company, 1913.

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OPHTHALMOSCOPIC DIAGNOSIS. By DR. C. ADAM. Translated by M. L. FOSTER, M.D. Illustrated. New York: Rebman Company, 1913.

STERILITY IN THE MALE AND FEMALE AND ITS TREATMENT. By MAX HUHNER, M.D. Price, $2.00. New York: Rebman Company, 1913.

TRAITEMENT DU TABES. By DR. L. LORTAT-JACOB. Price, one franc. Paris: Librairie Emile Bougault.

TRAITEMENT DE L'EMPHYSEME. By DR. S. I. DE JONG. Price, one franc. Paris: Librairie Emile Bougault.

TRAITEMENT DE LA CONSTIPATION. By DR. GEORGES VITRY. Price, one franc. Paris: Librairie Emile Bougault.

LES REGIMES ALIMENTAIRES DANS LES MALADIES DES VOIES DIGESTIVES ET DE LA NUTRITION. By DRS. HAMAIDE and NIGAY. Paris: Librairie Emile Bougault.

LE DIABETE ARTHRITIQUE. SA CAUSE; SON TRAITEMENT. By DR. ALBERT VEILLARD. Price, one franc, 50. Paris: Librairie Emile Bougault, 1913.

LABORATORY METHODS. With special reference to the needs of the general practitioner. By B. G. R. WILLIAMS, M.D., assisted by E. G. C. WILLIAMS, M.D.; introduction by V. C. VAUGHAN, M.D., LL.D. Second edition; illustrated. Price, $2.50. St. Louis: C. V. Mosby Company, 1913.

A CLINICAL SYSTEM OF TUBERCULOSIS, DESCRIBING ALL FORMS OF THE DISEASE. By DR. B. BANDELIER and DR. O. ROEPKE. Translated by G. B. HUNT, M.D., B.S. Toronto: The Macmillan Company of Canada, Limited, 1913.

THE SANITARY OFFICER'S HANDBOOK OF PRACTICAL HYGIENE. By W. W. O. BEVERIDGE, D.S.O., LIEUT.-COL. R.A.M.C., and C. F. WANHILL, MAJOR R.A.M.C., M.R.C.S. (Eng.), L.R.C.P. (Lond.). Second edition. London: Edward Arnold. Toronto: The Macmillan Company of Canada, Limited, 1912.

VACCINE THERAPY: ITS THEORY AND PRACTICE. By R. W. ALLEN, M.D., B.S. (Lond.). Fourth edition. Toronto: The Macmillan Company of Canada, Limited, 1913.

NEURASTHENIA. By GILBERT BALLET. Translated by P. C. SMITH, M.D. Third edition; illustrated. Toronto: The Macmillan Company of Canada, Limited, 1913.

A TEXT-BOOK OF BIOLOGY. For students in medical, technical, and general courses. By WILLIAM MARTIN SMALLWOOD, Ph.D. Octavo, illustrated. Price, cloth, $2.75 net. Philadelphia and New York: Lea & Febiger, 1913.

DISEASES OF THE STOMACH, INCLUDING DIETETIC AND MEDICINAL TREATMENT. By GEORGE ROE LOCKWOOD, M.D. Octavo, illustrated. Price, cloth, $5.50 net. Philadelphia and New York: Lea & Febiger, 1913.

HYGIENE AND SANITATION. A Text-book for Nurses. By GEORGE. M. PRICE, M.D. 12mo. Price, cloth, $1.50. net Philadelphia and New York: Lea & Febiger, 1913.

IONIC MEDICATION. THE PRINCIPLES OF THE METHOD AND AN ACCOUNT OF THE CLINICAL RESULTS OBTAINED. By H. LEWIS JONES, M.D. Price, 5s. net. London: H. K. Lewis, 1913.

A MEETING of the governors of the Hamilton Hospital and the controllers of the city took place June 18th. The meeting resulted in the appointment of a committee to investigate the conditions existing at the hospital, which recently drew forth some criticism from Dr. Bruce Smith, and to report on the repairs and improvements required to put the hospital into a better condition.

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Retrospect of Gynæcology

TREATMENT OF UTERINE FIBROIDS BY *X*-RAYS

GRAUSS AND TEMBKE—*Rontgentiefentherapie*

BLOODLESS ovariotomy is the aim of *x*-rays in the treatment of uterine fibroma. The experimental stage is past, and definite results can now be promised in the treatment of uterine fibroma by *x*-rays. The introduction of the treatment came from theoretical reasoning. In 1903, it was shown that the spermatogenic cells of the testicles could be killed, or stunned by *x*-rays in suitable doses. Soon after this was discovered, Haberstaedter showed that the ovaries of rabbits atrophied under *x*-ray applications. In 1904, cases of fibroma uteri were treated with *x*-rays and good results were reported. In 1909, the treatment began to be used more extensively. Before that year it had remained in the hands of a few experimenters, of whom Foveau de Courmelles was the most energetic, and he was able to report success in fifty-three cases. In successful cases the hæmorrhage is arrested, the menstrual period is suppressed, and the fibroid cannot be felt, or is considerably reduced in volume. The *x*-ray treatment is in fact a bloodless ovariotomy which brings on an artificial menopause. It is probable that the internal secretion of the ovary is not destroyed. The method as now employed is the same wherever the treatment is in use, but techniques differ. Every operator endeavours to get a large dose of *x*-rays to reach the ovaries without causing injury to the skin. This is most successfully accomplished by the method used in the Frauenklinik at Freiburg in Germany.

By this method the *x*-rays are delivered through a delivery tube. The rays are directed obliquely on to the abdomen, the right and left parts of the abdomen being treated at separate sittings. Thus the skin of the median region of the abdomen is less irradiated, so that the rays will not injuriously affect the median line. Another portal of entry is per vaginam. The rays are made to pass through a vaginal speculum with the patient in the lithotomy position. It is stated that Zaretsky, by the latter method alone, succeeded in producing complete amenorrhœa. The sacro-sciatic notch is used as another portal of entry. For this purpose the patient lies on her side and the rays are directed obliquely upwards

in the line of the ovaries. The median line of the back is also rayed over the region of the ovaries.

Another method is to have the patient sitting upright, and to direct the rays horizontally through the back. In patients with loose skin over the abdomen, one can move the skin about so freely that two doses of *x*-rays can be given from the same point, while the rays fall on different skin during the application of each dose. In every application the skin focus distance is 20 cm., and 3 mm. of aluminium are used as a filter.

A dose of 10x is given at each portal of entry. The dose is measured on the skin by Kienböck's method. The hardest possible *x*-ray tube is used. Rays should have a hardness of at least 8 Benoist. This is, shortly, the technique employed, and there is a good reason for every detail.

The treatment has proved successful in myoma uteri and in climacteric flooding. The dose of *x*-rays required to produce an artificial menopause varies with the patient's age. The nearer she is to the climacteric period the smaller is the dose required.

Bordier gives the following indications and contra-indications for treatment by *x*-rays: (1) patients under thirty-nine years of age should not be treated by *x*-rays, (Gaus states that ammenorrhœa can be produced at any age); (2) interstitical fibroma is the most suited for *x*-rays; pedunculated fibroma should be treated surgically; (3) radiotherapy acts like a charm in cases with profuse menstrual hæmorrhage; (4) moderate sized tumours are most suitable; (5) hæmorrhages of the menopause are successfully terminated by *x*-ray treatment. One or two treatments are sufficient for the purpose.

Contra-indications are: calcified myoma, malignant, infected, suppurating tumours, suppurating salpingitis, and pelvic peritonitis.

The artificial menopause is accompanied by the usual disturbance of the natural menopause—hot flushes and nervous symptoms.

The technique reported in "Röntgentiefentherapie" far surpasses any method used in the past. The method which, literally translated, is called "intense raying with large doses," has given the best results. The authors report ten cases treated in this way. In these ten cases the average dose given was 1480 x. The smallest total dose was 693x, and the largest total dose was 2284x. The average time to produce amenorrhœa was one and a quarter months, the longest time required was two months, and the shortest one

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month. The authors feel that they can produce these results "without regard to the age of the patient, or to the size of the tumour." They describe their technique so fully, that any *x*-ray expert should be able to reproduce their results. They report two hundred and five cases treated by various methods, but their final ten cases, treated by "intense raying with large doses," have given them the greatest satisfaction. My own experience is limited to the longer method whereby I succeeded in producing amenorrhœa, and causing the disappearance of a myoma after about five months of treatment. To be able to produce the same result in a month is certainly a great step in advance. Though this method will never surpass the surgical removal of a fibroid, yet there are cases in which the *x*-ray method has proved a great boon to patients suffering from fibroma uteri. Such treatment with massive doses should only be carried out by those who are expert at measuring large filtered doses of *x*-rays.

A. Howard Pirie

Res Judicatæ

THE RESULTS OF THE FRIEDMANN TREATMENT

Report of the Committee of the Canadian Association for the Prevention of Tuberculosis

THE following report was read at a general meeting of the Canadian Medical Association in London, Ontario, June 25th, 1913:

In order to allay public excitement and to afford to the medical profession and people of Canada, an authoratitive statement regarding the value of Dr. Friedmann's treatment, the Canadian Association for the Prevention of Tuberculosis nominated a committee of five members to study and report upon the cases inoculated by Dr. Friedmann at Montreal, Ottawa, Toronto, and London. The committee has added to itself those physicians who have under observation the cases treated in these cities. The committee thus constituted begs to report that it has carefully studied the case

histories of the patients inoculated by Dr. Friedmann. These number altogether 161, namely, for Montreal 55, for Ottawa 10, for Toronto 81, for London 15.

As a result of our observations from March 11th to the present the following conclusions seem justifiable:

1. The inoculations have neither constantly, nor frequently, been followed by any marked change in the clinical course of the disease.

2. The cure or progress towards cure claimed by Dr. Friedmann for his treatment has neither constantly, nor even frequently, taken place in the time during which these cases have been under observation.

3. Thus upon investigation the committee finds that the results have been disappointing, that the claims made for this remedy have not been proved, and that nothing has been found to justify any confidence in the remedy.

(Signed) J. GEO. ADAMI,
J. J. MacKENZIE,
A. H. CAULFEILD,
E. S. HARDING,
JOHN W. S. McCULLOUGH,
WM. H. ROSS,
J. H. ELLIOTT,
GEO. D. PORTER.

Dr. Chas. A. Hodgetts, a member of the committee, being averse to making any report whatever, did not sign the above.

THE Toronto Preventorium, which was opened officially on May 7th, is intended for the treatment of children who show a possible tendency to tuberculosis. Additions to the building are being made and it is hoped will be completed in the autumn; the institution will then accommodate about seventy-five children.

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Obituary

Dr. Severin Lachapelle, of Montreal, died suddenly June 18th, in the sixty-fourth year of his age. Dr. Lachapelle was born in the parish of St. Rémi, county of Napierville, Que., in 1850. While studying at the Montreal College, he joined the Canadian regiment which was sent to Italy to join the forces against Garabaldi, and after two years of service he returned to complete his studies at the Victoria College of Medicine. In 1874, he began to practise in St. Constant, Que. Two years later he removed to St. Henri, where the remainder of his life was spent. Dr. Lachapelle was particularly interested in diseases of children and directed his efforts towards the prevention of infant mortality. Apart from his professional work, he proved himself a good citizen, willing to take his share of civic duties and to do what he could for the betterment of the community in which he lived. From 1892-1896, he was Conservative member of Parliament for Hochelaga; he was also ex-mayor of St. Henri, professor of medicine at Laval University, and superintendent of the Montreal Crèche. He leaves a widow, two sons, and a daughter.

Dr. Caverley, of Trenton, Ontario, died from pneumonia, June 8th. Before going to Trenton, Dr. Caverley practised for some years in Belleville.

Dr. T. H. Stark, of Toronto, died June 9th, from angina pectoris. Dr. Stark was in the fifty-eight year of his age; he was born in Quebec, and was a graduate of Trinity University, where he obtained his M.D. degree in 1881. The year 1881-1882 he spent as house surgeon at the Toronto General Hospital, and soon afterwards went into general practice, which he continued almost to the day of his death.

Dr. J. B. Neff, of Port Colborne, Ontario, died at the Welland Hospital, June 27th. Dr. Neff was a popular physician throughout Welland County, having practised at Port Colborne for over fifty-one years. He was born in the township of Barton in 1837, and received his primary education at the Hamilton Grammar School; his M.D. degree was obtained from the Philadelphia

College of Medicine. He subsequently became a member of the Ontario College of Physicians and Surgeons and commenced the practice of his professoin at Stonebridge, later going to Port Colborne. Dr. Neff was the first president of the Welland County Medical Association, which was organized seven years ago.

DR. JERROLD BALL, of Toronto, died of appendicitis, July 5th. Dr. Ball was born near Meaford, in Grey County, in 1846, and graduated from the Victoria Medical School in 1874. He practised in Toronto for nearly forty years and was well-known and greatly esteemed. He is survived by his widow and one son, Dr. Harold D. Ball.

DR. JOSEPH BEAUDIN, of Ottawa, died July 7th. He had been ill for some time and was in the seventy-third year of his age. He was well-known both in Montreal and in Ottawa, and for twenty-five years was the medical officer of health for the latter city. He is survived by his widow, two sons, and three daughters.

News

MARITIME PROVINCES

THE medical inspection of schools at Amherst, during the period from September, 1912, to June, 1913, has resulted as follows: 1,208 physical examinations were made; of these 343 children were in normal health, 293 had enlarged tonsils, 116 were suffering from adenoids, and 217 had defective vision.

A PRIVATE hospital is to be opened in Sydney for the benefit of paying patients, until such time as a general hospital is established to take the place of the Brooklands Hospital, recently destroyed by fire. Emergency cases will be received by the Marine Hospital, but the accommodation there available will not permit of more than this.

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The plans have been prepared for certain additions to the Fredericton Hospital. During the month of June, 45 patients were treated in the hospital, 16 were discharged, and 4 deaths occurred.

Six hundred and seventy-nine patients were admitted to the Moncton Hospital during the year ending May 31st, 1913. Of these, 523 were surgical cases and 156 were medical; 555 patients were discharged "cured," 38 "improved," 4 "not improved," and 4 were incurable; 16 were not treated and 30 died. The greater number—447—were private patients. The question of enlarging the hospital and building a new nurses' home is under consideration.

ONTARIO

At the annual meeting of the Ontario Medical Council, which took place at Toronto, July 2nd to 5th, a resolution was passed congratulating Sir James Grant on the attainment of the forty-eighth year of his membership in the Ontario College of Physicians and Surgeons. Sir James being the only original member now serving on the council.

On this occasion, the board of examiners made the following report: examinations held in the autumn of 1912—29 successful and 15 unsuccessful candidates; examinations held in the spring of 1913,—65 successful and 37 unsuccessful candidates.

The following is the list of those who have obtained a degree in medicine from the University of Toronto:

Degree with Honours: Group 1, F. M. Walker; Group 2, H. W. Wookey; Group 3, A. A. Fletcher, K. M. B. Simon.

Medals: W. A. Scott, A. A. Fletcher, Gold; K. M. B. Simon, first silver; H. W. Wookey, second silver.

Chappell prizes in Clinical Medicine: A. A. Fletcher.

Pass: S. L. Alexander, W. C. Allison, J. P. Austin, H. H. Argue, C. A. Brisco, F. A. Brockenshire, J. F. Burgess, T. L. Butters, T. D. Cumberland, G. P. Dunning, P. E. Faed, O. E. Finch, R. O. Frost, R. W. Gliddon, G. C. Graham, G. G. Greer, B.A., E. R. Hastings, B. F. Keillor, E. P. Lewis, B.A., G. W. Lougheed, J. L. Mahoney, G. S. McAlpine, Miss A. McEwen, T. H. McKillip, D. B. McLean, S. W. Otton, R. C. Phelps, W. A. Reddick, S. A. Richardson, W. L. Robinson, B.A., H. P. Rogers, A. C. Rowswell, T. M. Savage, J. D. Shields, E. A. Smith, H. A. Snetsinger,

J. Thomson, J. G. Turnbull, G. A. Watson, F. E. Webb, G. E. White.

Graduates in the physiological and biochemical course, or in the course of biological and Physical sciences: A. E. Best, A. Brodey, C. P. Brown, H. L. Bryce, O. E. Carr, K. E. Cooke, G. E. Darby, A. M. Day, W. J. Deadman, W. H. Eby, J. Z. Gillies, H. Hart, W. O. Henry, W. J. Hicks, O. M. Irwin, D. B. Leitch, F. J. Livingston, C. A. McClenahan, A. E. McCulloch, J. F. McLay, R. W. Phillips, L. M. Rice, H. P. Robinson.

Medals: C. P. Brown, gold; O. M. Irwin, first silver; A. Brodey, second silver; G. E. Darby, third silver.

Honours: Group 1, C. P. Brown; group 2, C. P. Brown, A. Brodey, G. E. Darby, A. E. McCulloch, L. M. Rice; group 3, C. P. Brown, G. E. Darby, O. M. Irwin; group 4, O. M. Irwin, C. P. Brown, A. Brodey.

Pass: S. O. Rogers, C. E. Trow.

The following are eligible for the George Brown Memorial Scholarship in Medical Science; the names are arranged in alphabetical order and not according to merit: A. Brodey, C. P. Brown, G. E. Darby, A. A. Fletcher, L. M. Rice, H. P. Robinson, K. M. B. Simon, F. M. Walker, H. W. Wookey.

MEASLES continues to be unusually prevalent throughout the province.

IT is probable that a small hospital will be established at Gore Bay. An effort is being made to collect the necessary funds.

A NURSES' home has been added to the Midland Hospital.

DR. R. W. POWELL, of Ottawa, has been appointed the first Registrar of the Dominion Medical Council.

DR. HELEN MCMURCHY, of Toronto, has been appointed inspector of the feebleminded and assistant inspector of hospitals and charities for Ontario.

DURING the past year over five hundred houses have been condemned in Toronto, as unfit for habitation; ninety-eight of these have been destroyed and fifty new houses erected in their place.

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AN outbreak of smallpox is reported from Wellesley. The usual precautions are being taken and it is not probable that many cases of the disease will develop.

MESSRS. D. T. MCAINSH & COMPANY, recently removed to 4 College Street, Toronto.

DURING the month of June, 904 cases of measles were reported in Toronto. Most of these cases were slight, only 10 of them proving fatal. Other infectious diseases reported were: smallpox, 62 cases; scarlet fever, 212 cases, 8 deaths; diphtheria, 139 cases, 16 deaths; whooping cough, 57 cases, 9 deaths; typhoid fever, 41 cases, 6 deaths; infantile paralysis, 4 cases, 2 deaths; cerebrospinal meningitis, 4 cases, all fatal; tuberculosis, 143 cases, 99 deaths.

THE Toronto City Council recently granted the sum of $210,000 to the new General Hospital; this is in addition to the $400,000 previously granted.

DR. M. O. KLOTZ, of Ottawa, has been elected president of the Ontario Medical Council for the year 1913-1914.

SEVERAL cases of smallpox have occurred recently throughout the northern part of Ontario, particularly among the lumber camps. In one camp, when visited by the health officer, it was found that practically every one had had the disease, but the fact had been kept secret. It is probable that most of the cases originated from this centre.

QUEBEC

THE Bruchési Institute, a tuberculosis dispensary which does good work, more particularly among the French-speaking population of Montreal, has instituted courses of lectures and practical demonstrations, open to any physician on the payment of a small registration fee, each course lasting two weeks and dealing particularly with the diagnosis of tuberculosis. It is intended next year to provide more advanced instruction for those physicians who avail themselves this summer of this much needed opportunity, and who may desire to study the subject more fully.

THE present building of the St. Justine Hospital, for infants at Montreal, has accommodation for thirty-six beds, which is not sufficient for the present requirements. It is proposed therefore to erect a new building on St. Denis Street, to contain sixty beds. The site has been secured and $27,000 subscribed towards the building fund. The plans are being prepared and it is hoped that the building will be completed within a year.

AN outbreak of smallpox recently occurred at Coteau Landing. As no effective steps were taken by the local board of health to prevent the further spread of the disease, the place was quarantined by the provincial health authorities.

DR. A. CAMPBELL GEDDES, professor of anatomy in the Royal College of Surgeons in Ireland, has been appointed to the Robert Reford Chair of Anatomy at McGill University. Dr. Geddes is a graduate of Edinburgh University.

A NEW hospital is to be built at Sherbrooke. A Children's Ward will be included in the building; it has been endowed by Mr. M. A. Macfarlane as a memorial to his late wife.

ARRANGEMENTS are being made to build a large hospital at Quebec; it will be under the direction of the Sisters of the Order Oblates de Marie.

MANITOBA

THE Sanitary Inspector's Association of Western Canada was organized at Winnipeg, a few months ago. H. R. H. the Duke of Connaught has consented to become the patron of the society; the president is Mr. E. W. G. Hague, assistant chief health inspector of Winnipeg.

AT the regular monthly meeting of the Brandon Hospital Board, held June 11th, it was decided to prepare the plans for the new hospital building, for which $100,000 was voted recently, and to increase the medical staff of the hospital from ten to twelve.

SASKATCHEWAN

IT is proposed to establish hospitals at the following places: Perdue, Biggar, Wilkie, Unity, Macklin, Pisask, Kindersley,

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Lumsden, Weyburn, Estevan, Glenavan, Grenfell, Broadview, Kamsa, Foam Lake, Wynyard, Davidson, and Yorkton.

A BY-LAW has been passed authorizing the Alsask town council to issue $6,000 of debentures and to build a hospital with the proceeds.

ALBERTA

A PRISON farm has been established about twelve miles from Edmonton, for the detention of inebriates who otherwise would be sent to jail. In order that those who are sent to the farm may remain there long enough to benefit by the treatment given, application will be made to the Attorney General for permission to extend the sentences if it is considered advisable to do so.

THE following is the list of infectious diseases treated in the Edmonton Isolation Hospital during the month of May: diphtheria, 5; diphtheria with typhoid, 1; scarlet fever, 18; scarlet fever with measles, 1; erysipelas, 14; measles, 38; tuberculosis, 3; smallpox, 3; mastoid operation following scarlet fever, 1; pharyngeal abscess following measles, 1. Three hundred and ninety cases of infectious disease were reported during the month. Of these 267 were measles, 9 of which resulted in death.

EVERY bed in the Calgary General Hospital is occupied and it is felt that some provision should be made in case of an epidemic; several of the rooms in the new isolation hospital are to be equipped at once to serve as reserve wards.

A NEW hospital is to be built at Medicine Hat. The present building only contains one hundred and twenty-five beds, which is now inadequate for the needs of the city. An emergency building is to be erected to provide the necessary accommodation until the new hospital is ready.

THE Edmonton Hospital Commission was duly appointed, July 17th. The commission has full control of all the hospitals of the city; it consists of five members elected by the city council, seven appointed by the former hospital boards, and three appointed by the University of Alberta.

A WHIRLWIND campaign is to be held in September, in aid of the Pincher Creek Memorial Hospital.

THE cornerstone of the new South Side Hospital was laid by the Mayor of Edmonton, on Wednesday, June 25th. The building is to be erected on the university grounds, a little south of the Alberta College. The first floor of the main building is already built and the service building is now to be commenced. The erection of this hospital was decided upon originally by the Strathcona Council, but later it was agreed that a joint university and city hospital should be built. This is now being done. The new hospital will contain eighty-five beds, forty-five of which will be for public patients. A roof garden will be provided for canvalescents and made accessible by the instalation of an electric elevator. The financial committee has been assisted very materially by a gift from Lord Strathcona of twenty-five thousand dollars.

BRITISH COLUMBIA

THE annual meeting of the Windermere District Hospital Association was held at Athalmer in April. A new hospital building is to be erected as soon as the necessary funds have been collected. In the meantime the plans are being prepared.

IN the report for May of the Provincial Mental Hospital at New Westminster, it is stated that there were in the hospital at the end of that month 289 male and 271 female patients; at the Mount Coquitlam Hospital there were 360 patients.

As the result of certain criticisms made concerning the management of the isolation hospital at Victoria, a committee was appointed to enquire into the conditions. The committee found no fault with the management of the hospital but considered that the equipment provided was somewhat inadequate.

$4,328.43 was collected on June 9th, for the Vancouver General Hospital. This is not quite as much as the "tag day" collections amounted to last year.

DR. M. T. MACEACHERN, superintendent of the Montreal Maternity Hospital, has been appointed general superintendent of the Vancouver General Hospital. He will take up his new duties at the beginning of this month.

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CANADIAN MEDICAL ASSOCIATION

Annual Meeting, June 24th to 27th, 1913

A.—Reports of Committees

1. *Abstract of the Report of the Finance Committee to the Executive Council on the work of the year since the last Annual Meeting*

THIS report dealt with the recent changes in the officers of the Association, and with the management of the Journal. Dr. Archibald and Dr. Small having resigned at the Edmonton meeting the secretaryship and the treasureship, respectively, Dr. W. W. Francis was appointed to the combined offices, and was also appointed assistant to the editor of the Journal. This effected a convenient centralization of the work, which had become too exacting for unsalaried officers busily engaged in active practice. In connexion with the Journal, the report dealt chiefly with matters in dispute between the publishers and the Finance Committee, especially certain advertisements which have been rightly objected to, and which the committee has not yet succeeded in inducing publishers to withdraw. A feeling was generally expressed at the Edmonton meeting in favour of changing the Journal from a monthly to a weekly; but this has been found to be impracticable for the time being, partly on account of difficulties in connexion with publication, and chiefly because of lack of funds. It was the opinion of the committee that such action must be deferred until the membership increases largely. A net increase of one hundred and seventeen in the membership was reported for the year.

Appended to this report was the treasurer's statement, which may be summarized as follows:

Summary of Treasurer's Statement for the Year Ending December, 1912.

Receipts

Balance from year 1911		$75 36	
Annual fees	$6,092 95		
Reprints, etc.	71 31		
Balance from retiring secretary's account	83 89		
		$6,248 15	
Overdraft at bank December 31st, 1912		126 68	
			$6,450 19

Expenditures

Typewriter, printing, etc.	$167 55		
Interest on bonds of Montreal Medical Journal Company	300 00		
		$467 55	
To secretary, January to September, office and travelling expenses		856 80	
" treasurer, January to September, office and travelling expenses		413 00	
" Edmonton meeting, clerical assistance		41 50	
" JOURNAL account		3,254 86	
" Editorial allowance, five months		625 00	
Refunds paid affiliated Provincial Societies:			
Ontario	$260 00		
Alberta	25 00		
British Columbia	35 00		
Manitoba	67 00		
Saskatchewan	25 00		
New Brunswick for members	19 65		
New Brunswick, circulars and postage	5 33		
	24 98		
		$436 98	
To secretary-treasurer, September to December—			
" Salary	$250 00		
" Stenographer	80 00		
" Miscellaneous	24 50		
		354 50	
		$6,450 19	$6,450 19

In submitting the financial statement for the second year since the JOURNAL was established, the secretary-treasurer pointed out that the receipts very nearly balance the expenditure. The total income was $6,324.51, and the expenditure $6,450.19, leaving a deficit of $126.68. The only outstanding accounts remaining unpaid were the editor's allowance for December, $125.00, and a sum, the amount of which was then uncertain, still due the publisher on the JOURNAL account. This has since been determined at $72.50, making a total of $197.52, which would increase the above deficit to $324.20. Against this, however, must be reckoned the fees of one hundred and fifty-nine members for 1912, which remained unpaid on December 31st. One hundred and three of these members have since paid their fees, a sum of $515.00. It was deemed best not to include this in the report for 1912. It would, however, have converted the above deficit of $324.20, into a balance of $180.80. On the other hand it must be noted that the editor needed only half his annual allowance of $1,500; it having accumulated

during several months when he was without an assistant. Of the fifty-six members whose fees are still unpaid for 1912, the membership of twenty-two was allowed to lapse, leaving thirty-four still in arrears.

In comparing this statement with that for 1911, which showed a balance of $75.36, and total receipts of $6,626.79, it should be noted that these included a balance of $1,140.70 from the Toronto meeting in 1910, and also the fees of thirty members due for 1911, who paid during the first quarter of 1912. The actual receipts from annual fees were $5,486.09 for 1911, and $6,093.05 for 1912.

2. *Report on Medical Inspection of Schools*, 1913

Alberta. In Edmonton a medical inspector has been at work for some time. He acts in coöperation with the health department and is of great assistance in getting information of infectious disease among the children. A medical inspector of schools has also been appointed in Calgary. Dr. Whitelaw, medical officer of health, Edmonton, reports that the movement in favour of medical inspection of schools is rapidly gaining ground in Alberta, and it is expected that the system will soon be established in all the cities.

British Columbia. Immediately after the last annual meeting of the Canadian Medical Association at Edmonton, the first annual report of the medical inspection of public schools in the province of British Columbia was published by the government.

Manitoba. In the city of Winnipeg for the year ending December, 1912, the two medical inspectors report over five thousand new pupils examined and over two thousand one hundred defective pupils re-examined. School nurses are employed who weigh and measure the children and prepare them for examination by the inspector. In cases of suspected contagious disease the nurses visit the homes of the children and do work of great value in preventing the spread of contagion. The principals of the schools and the teachers have been prompt to detect and report suspicious symptoms and this also has been a great help. Special attention has been given to the state of the children's teeth and a very high proportion of dental caries is found to be present.

Medical services in Winnipeg do not stop short at inspection. for an attempt at treatment has been begun. Provision is made for the treating of dental defects at the dental clinic in connexion with the out-door department of the General Hospital. Also circulars

have been printed and distributed which point out the importance of proper care of the teeth, with the result that in a large number of cases treatment has been promptly sought. An attempt has also been made to give practical instruction in health matters. Girls have been instructed at a nursery mission in all that pertains to the care and feeding of infants, also in the preparation and preservation of milk, and various questions of personal hygiene.

New Brunswick. No progress can be reported. Beyond the legislation enabling school boards to take up medical inspection which was passed last year, nothing has been done. This is all the more disappointing when we remember that in this province nearly twenty years ago the venerable Dr. Bayard, of St. John, urged the adoption of medical inspection and at least a "compulsory investigation of the teeth of school children and a state-aided rectification of defects in them."

Nova Scotia. The Medical Society of Nova Scotia, as much as thirty years ago agitated in favour of medical supervision and physical training in schools and properly equipped playgrounds, and at one time a committee appointed by the society held a conference with the government and met with a sympathetic hearing. But the adverse influence of one or two prominent members of the government destroyed all hope of progress.

During the last few years the educational authorities have been alive to the value of medical inspection and in Halifax they have prevailed on the city council to set apart a sum which affords a nominal salary to two medical inspectors. Here also the dental profession undertook to make gratuitous inspection of the teeth of school children. In Amherst a very thorough and well organized system of inspection has been set up, and the medical inspection is done, so far, gratuitously, for the medical men feel that when the public realize the benefits of inspection they will be ready to pay for it. In Amherst also the school board employs a school nurse, and has arrangements for aiding in various ways the children of the very poor.

Ontario. Steady progress has been made in Ontario throughout the year in the medical inspection of schools. The sphere of school nurses and school doctors has been widened, larger appropriations have been made, popular interest has increased, and the work has been begun in a few more places. In St. Catharines, the City Teachers' Association passed a resolution which was presented to the Board of Education in March, 1913, asking that consideration be given to the necessity for the medical inspection

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of children in the public schools. And the matter was referred to the School Management Committee. The members of one of the women's institutes in Ontario opened a subscription list for the salary of a school nurse, and offered her services for three months to the Board of Education. This offer was accepted by the board. In Niagara Falls, London, Hamilton, Brantford, Toronto and elsewhere, the work has been carried on during the year. In Toronto a great increase was made in the appropriation and in the number of doctors and nurses appointed. The Open Air Forest School has been continued and the school nurses have begun classes for "Little Mothers," in infant care and management. Important dental clinics have also been established. At the recent meeting of the Ontario Health Officers' Association at Toronto, a resolution was passed stating that school medical inspection should be under the direction of the medical officer of health. The Hon. Dr. Pyne, minister of education, who has always shown a sympathetic interest in this work, has invited Dr. James Kerr, of London, England, to visit Ontario, and lecture on Medical Inspection of Schools, in September, 1913.

Prince Edward Island. Authority has been obtained for medical inspection in the city of Charlottetown, but no money has been granted to meet the expense of it.

Quebec. In the city of Montreal there exists a very thorough and well-organized system under the direction of Dr. Laberge, who is chief medical inspector and is also at the head of the department for dealing with infectious disease. Nineteen physicians and four nurses are employed. Each inspector has an average of eight schools to visit and an average of five thousand pupils to inspect. The inspectors are expected to give all their time from 9 a.m. to 5 p.m., to the work and the salary is $1,200 per annum. The inspectors have no authority in the school. If a case of contagious disease is detected the principal is notified and a request made that the child be removed. In cases of non-contagious disease the parents are notified by a sealed letter and asked to have the child treated. It is also the duty of the inspector to visit homes and factories with the view of checking the spread of infectious disease, and they make a monthly report to the chief inspector upon their general work. The duties of the nurses are to treat at the schools and under the direction of the medical inspector cases of minor affections. Also to visit the homes of the absentee pupils to enquire for them and to induce the parents to secure adequate treatment.

Westmount.—In the corporation of Westmount the inspection is under the direction of the medical officer of health, Dr. Hutchinson. The duties of the inspector are to make an individual inspection of each pupil three times a year, at the opening of the school in September, at the New Year and after Easter. The examination covers the following points: "General appearance, throat, teeth, pulse, hearing, sight, vaccination, scrofula, skin affections, spinal deformity and evidence of infectious disease." The inspector is also at the call of the principal of the schools at any time to examine any pupil who exhibits symptoms of illness in the schoolroom or is suspected of having infectious disease. Definite forms are supplied and reports are made to the health department at stated times.

Lachine.—Here also the medical inspection is directed by the Board of Health. The school buildings are subjected to a very thorough inspection once a year and the results of examination are sent to the school trustees. The examination of the pupils is also made once a year. The examination of sight and hearing is apparently carried out and recorded by the teachers, who are supplied with Snellen's scales and very full directions for testing sight and hearing. Notices are sent to the parents when necessary. Dr. Baudouin hopes soon to have a nurse appointed to "follow up" the defects noted at the routine inspection.

In the city of Three Rivers, medical inspection of schools is also being carried out, and the cities of Quebec and Sherbrooke are agitating the question but have not decided on action.

At the convention of the Sanitary Services of the Province of Quebec in 1911, the secretary of the Board of Health, Dr. Elzear Pelletier, outlined a plan of inspection suitable to the rural districts, and a most interesting discussion took place, in which some of the difficulties attending the introduction of general medical inspection of schools were indicated, and a committee including several of the leading physicians of the province was appointed to formulate a definite plan of medical inspection of schools for the province, and to take the necessary steps with the government and the Council of Public Instruction to make it practicable. (Vide, Compte-Rendu de la Quatrième Convention Annuelle des Services Sanitaires de la Province de Québec, 1911.)

Saskatchewan. Dr. Seymour, commissioner of public health for the province of Saskatchewan, writes that in Regina, Moosejaw, and Saskatoon medical inspection has been established. In Moosejaw for the past three years there has been an examination

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of each pupil twice a year. Records are kept on file and parents are notified when it is advisable to have treatment. The work is very successful and the general average of the pupils' health has been raised.

In Saskatoon the inspector has two graduate nurses in his employ who devote all their time to the work. The results are satisfactory and are appreciated by the parents who coöperate with the medical supervisor.

In Regina the method is not so satisfactory. Probably from a dread of incurring expense the work appears to be done by a nurse. A medical man has also been appointed, but the understanding is that the nurse "should avail herself of his advice from time to time," the doctor to receive a certain sum for every pupil he attends. Dr. Seymour reports that the doctor's services "have evidently not been required for the past three or four months and the work so far as he is concerned is receiving little attention." This was the position at the close of the year.

It is easy to see that the medical inspection of schools in this country is still in a very elementary stage. In the larger towns much progress has been made and in two or three instances an excellent system has been organized, but this progress is generally due to the personal effort of earnest individuals, teachers and doctors, who recognize the vast importance of the subject. The great bulk of the nation is apathetic. The reasons are not far to seek. In the first place we have the financial difficulty. While in various parts of the country we have instances of voluntary service rendered by medical practitioners in carrying out medical inspection and supervision it is evident that in the great majority of cases, especially in the large centres of population efficient medical inspection can only be secured by the expenditure of money. And we all know the invincible reluctance of municipal councils to add to the taxation of their constituencies.

In the second place, both educational and medical advocates of medical inspection hesitate to launch into systematic work or to appeal to the ratepayer for support, until some definite system of medical inspection has been approved. The whole scheme is still chaotic and the various provinces have varying systems. In some cases, e.g., Nova Scotia, the educational authority has taken the initiative, urges the adoption of medical inspection and secures financial assistance. In other cases, as in Quebec, it is the public health authority that is endeavouring to persuade the Education

Department to adopt medical inspection. And in yet other cases the inspection comes short of what it might do because of a want of correlation and coöperation between the educational and health authorities.

In a study of medical inspection as it exists in various countries the question arises, is this a part of the educational machinery of the country or does it fall among the activities of the Public Health Department? It is perfectly evident that without the most cordial and earnest coöperation between the education department and that of public health, between the teacher and the doctor, the whole thing must be a failure, Each is essential.

But medical inspection is medical work, and the responsibility for its efficiency rests on the medical profession. It would appear reasonable to demand that the medical inspector of schools should in the first place have the special qualifications of a medical officer of health, and in addition should have special knowledge not only of school hygiene, but of educational methods and problems.

But, again, what is the object of medical inspection? Is the science of medicine invoked simply to facilitate the work of the teacher or is the aim in view the elevation of the standard of health of the community? A wise system of medical inspection, including school hygiene, must ensure incomparable benefits to the children attending the school, but these benefits do not cease with school life. The educational influence of medical supervision and advice will tell throughout life, and through the children of school age must to some extent affect the parents and older members of the families from which they come.

It would be a great mistake to let a system of medical inspection degenerate into a mere compilation of vital statistics, but there is no reason why it should not be so conducted as to be in a measure a stocktaking of the national health. The tabulated results of the inspections would form an index of the rise or maintenance or fall of the standard of national health.

Now, if the direction and control of medical inspection is to lie with the educational authority each province of the Dominion will have its own system. The general features may be the same, but the details are certain to vary, as they do now, and the results could not in any sense be looked upon as national.

It seems eminently desirable that a uniform system of medical inspection should be in use throughout the Dominion. There seems to be little prospect that our present system of education will be changed from a provincial to a federal system. But the

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circumstances which stand in the way of a federal ministry of education need not obstruct the establishment of a federal ministry of public health. And it is only by the creation of such a ministry that a system of medical inspection, uniform in method and scope and truly national in extent, can be established in Canada.

Such a public health service, taking cognizance of all matters pertaining to the national health, correlating the various branches of public health, the immigration and quarantine stations, the sanitation of factories and public buildings, the army medical service with its recruiting stations and camps, the control of infectious diseases, and the various agencies to secure the public against the adulteration and contamination of food, would seem to be also the proper authority to direct and control the medical inspection of schools.

In presenting this report the Committee on Medical Inspection in Schools wish to suggest that they be relieved of their duties, and that the views of the Canadian Medical Association on medical inspection be hereafter presented and discussed in the Section of Public Health.

They also recommend that the Canadian Medical Association appoint delegates to the International Congress on School Hygiene to be held at Buffalo, August 28th to 31st next.

Respectfully submitted,

JOHN STEWART, *Chairman*,
HELEN MacMURCHY, *Secretary*.

3. *Report of the Committee on Necrology*

Your Committee on Necrology beg to report that they have tabulated the deaths occurring amongst the members of the Canadian medical profession during the past year, nearly one hundred in number. Many had reached a good old age, and though many had been in previous years members of this Association, your committee's labours have been made light by the fact that we have lost none of those appearing on the secretary's roll for the current year.

Though not a member for years your committee feel that reference should be made to the Hon. John Harrison O'Donnell who was vice-president of the Association in 1886-87 when J. E. Graham, of Toronto, was president.

He was born and educated in Simcoe, Ontario, and was a

graduate of Trinity University. He went to Manitoba in 1869, and from St. Paul to the border accompanied the party of Governor McDougall. Those who can recall the Red River Rebellion will understand that at this point the parties separated. When Dr. O'Donnell reached Winnipeg, he found it in a state of unrest. Within a month or six weeks he and his wife and some sixty other Canadians were taken to Fort Garry, then held by the Riel party, as prisoners. Dr. Schultz was also one of the prisoners; he, however, succeeded in escaping and leaving the country, subsequently reaching Ottawa. When these stirring times were over, and civil order was re-established, Dr. O'Donnell was made a member of the first Legislative Council and remained a member during its existence. In 1872, he was appointed to the Provincial Board of Education, and maintained an active interest throughout in municipal and provincial affairs. In 1909, Dr. O'Donnell issued a volume of 160 pages of reminiscences under the title, "Manitoba as I saw it, from 1869 to Date." This with its illustrations gives a most interesting personal impression of men and events with which he was closely associated.

He retained to a marked degree the confidence of his fellow practitioners.

Your committee would also like to make reference to the de ath of Dr. N. H. Allcock, Professor of Physiology at McGill, whose name, though not on our rolls, appears upon this year's programme.

One who knew him well has spoken of him as a characteristic North of Ireland man, alert, and humorous, whose physiological teaching had the great virtue that it was constantly related to practical medicine.

Respectfully submitted,

J. H. ELLIOTT, *Chairman.*

B.—Resolutions of the Executive Council

The following resolutions of the Executive Council on the retirement of Dr. Small from the treasurership, and of Dr. Archibald from the secretaryship, were read before the general meeting of the Association, June 27th, 1913.

The Canadian Medical Association desires to place on record its high appreciation of the valuable services rendered by Dr. H. B. Small during his tenure of the office of treasurer, extending from

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1894 to 1912, inclusive. Much of the success of any great organization depends upon the character of its officers. In the person of its retiring treasurer, the Canadian Medical Association has had one who commanded the respect as well as the esteem of its members —one indeed to whom it was a pleasure to pay the annual tribute. Dr. Small was not content merely to carry the official purse, but was always anxious to add to its weight and value; and to this worthy end he ever took a warm interest in the affairs of the association, and in all efforts to promote its growth and success.

That he may long be spared to participate in its councils, and continue to give the Association the benefit of his ripened judgement, is the sincere wish of his many friends.

The Canadian Medical Association cannot allow the retirement of Dr. Archibald from the responsible post of general secretary to take effect, without conveying to him its hearty appreciation of what it owes to him for the excellent work he has accomplished in the discharge of the manifold duties of that position, involving in a marked degree tact, patience, and executive ability. The position of secretary to an organization, which covers in its operations a vast country extending from the Atlantic to the Pacific, is a most onerous and responsible one. The members of the association in according Dr. Archibald the sincere thanks which are his due for the admirable conduct of his office, desire to convey to him their best wishes for his future welfare and success.

C.—Reports of Sections to the Executive Council,

London, Ontario, June 26th, 1913

Section of Public Health

1. *Report of the Committee upon Dr. John Stewart's report on the Medical Inspection of Schools, as adopted by the section*

1. That the report of the Committee on Medical Inspection of Schools be sent to the Association Journal with a recommendation that it be published therein.

2. That the thanks of the Association are due to Dr. Stewart for his work on this report.

3. That where the municipality is large enough it is advisable to have a full-time inspector.

4. That, as infectious diseases are under the direction of the Provincial Health Act, the medical inspector's duty is to report them to the health officer.

5. That the following be appointed by this association as its representatives at the International Congress on School Hygiene at Buffalo, August 28th to 31st, and that the secretary of the Association be instructed to notify each of the members and also the secretary of the Congress: Dr. Bapty, Victoria, British Columbia; Dr. D. J. Dunn, Edmonton, Alberta; Dr. Maywood, M.H.O., Calgary, Alberta; Dr. Thompson, Regina, Saskatchewan; Dr. A. W. Allum, Winnipeg, Manitoba; Dr. Helen MacMurchy, Toronto, Ontario; Dr. Paquin, Quebec City, Quebec; Dr. Melvin, D.P.H., St. John, New Brunswick; Dr. John Stewart, Halifax, Nova Scotia.

6. That the present Committee on Medical Inspection of Public Schools, be relieved of its duties and that the Section of Public Health, hereafter take the matter in hand.

Committee: Dr. Halpenny, *Convener*, Dr. Parke, Dr. Hutchinson, Dr. Whitelaw.

This report was approved by the Executive Council.

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2. *Report of Committee on Venereal Diseases, as adopted by the Section*

1. In view of the deplorable prevalence of venereal diseases, which in all probability affect a larger number of families than tuberculosis, and whereas the test known as the Wassermann reaction is absolutely necessary in connection with the proper treatment of syphilis, the Section of Public Health of the Canadian Medical Association hereby resolves that the several provincial boards of health throughout the Dominion be requested to perform gratis the Wassermann reaction on the order of any member of the medical profession and that a copy of this resolution be sent to the provincial secretary of each of the provinces.

Committee: Dr. Fraser Harris, *Convener*, Dr. Adami, Dr. Hill, Dr. Williams, Dr. Bapty.

This clause of the report was approved by the Executive Council, but two further clauses recommending that the venereal diseases should be added to the statutory list of notifiable diseases

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classified as infectious, and that a permanent committee of the Association be nominated to watch over these matters, were referred back to the committee for further information.

3. *Resolution*

Moved by Dr. Revell, seconded by Dr. Whitelaw, carried. That, whereas by the Canada Medical Act, the medical profession in Canada has been nationalized, thus giving a proper basis for a national administration of the public health.

Therefore, be it resolved,—

That in the opinion of this section it is desirable that an organized effort be made to unify the public health laws of the several provinces of the Dominion of Canada, and that to further this end a Committee of the Canadian Medical Association be now appointed.

The Executive Council approved this resolution and appointed Drs. Helen MacMurchy and Edward Fidlar a Committee with power to add.

Section of General Medicine

The Section of General Medicine instructed the chairman to report to the executive of the Canadian Medical Association the earnest desire of this section for a strong and definite representation, to the health authorities of the various provinces, of the necessity for legislation controlling the marriage of individuals whose family history shows inherited tendency to degenerative diseases of the nervous system.

(Signed) J. F. FOTHERINGHAM,
Chairman.

ONTARIO MEDICAL ASSOCIATION

At an executive meeting of the Ontario Medical Association held in London, on June 26th, a committee was appointed to consider the best means of organizing the county societies to bring them into closer communication with the provincial body, and thus with the Canadian Association. The Committee consists of the president, vice-president, secretary and Drs. John Moore, Wallace, and Moorehouse. Other business which was to come before the association was laid over till the next meeting, which will take place in Toronto in 1914.

Canadian Literature

Original Contributions

Dominion Medical Monthly, July, 1913:

Radium in Dermatology	W. H. B. Aikins and F. C. Harrison.

The Canadian Journal of Medicine and Surgery, July, 1913:

Hirschsprung's Disease, or Congenital Dilatation of the Colon in a boy of three years: Resection of Colon: Recovery	H. T. Machell.
Health Matters in Ontario	A. H. Wright.
The Medical Guild in Civic Life	J. Hunter.

The Public Health Journal, June, 1913:

The Use of Vital Statistics in the Public Health Service	G. C. Whipple.
The Importance of Milk as a Food	A. W. MacPherson.
Disposal of Domestic Sewage in Suburban and Rural Areas	R. E. Wodehouse.
The Care of the Teeth of School Children in Germany	Dr. Dieck.
Memoranda of Sanatoria in Tuberculosis with mostly German Data	W. S. Magill.

Le Bulletin Médical de Québec, June, 1913:

Hygiène municipale	E. Nadeau.
La Tubérculose et son diagnostic	F. Dubé.
Obsérvation clinique	J. P. Frémont.

The Canadian Practitioner and Review, July, 1913:

Subacute Combined Degeneration of the Spinal Cord	J. London.
The Physiology and Pathology of the Internal Secretory Organs	J. Ferguson.

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The Canada Lancet, July, 1913:

Terminal Disinfection in Typhoid Fever and Diphtheria . . . . . G. A. Dickson.
Disposal of Domestic Sewage in Suburban and Rural Areas . . . . R. E. Wodehouse
Mr. Abraham Flexner's Report upon Medical Education in the British Isles . . . . . L. Irwell.
Public Health Legislation in the Province of Quebec . . . . . J. A. Hutchinson.

Western Canada Medical Journal, June, 1913:

Clinical Case—Syphilitic Condition of the Patella . . . . . J. E. Lehmann.

Publication No. 7, issued by the Medical Faculty, Queen's University, June, 1913:

A Great Teacher (Sir Michael Foster) and His Influence . . . . . J. George Adami.
The Relation of the Hospital for Mental Diseases to the Community . . E. H. Young.
The Use of Vaccines in Eye Infections . James Garfield Dwyer.
Clinical Studies on the Curative Action of Leucocyte Extracts in Infective Processes . . P. H. Hiss, Jr., and J. G. Dwyer.
Middle Ear Tuberculosis . . . T. H. Farrell.

Medical Societies

AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION

The sixty-ninth annual meeting of the American Medico-Psychological Association was held at the Clifton Hotel, Niagara Falls, on June 10th, 11th, and 12th. There was a large attendance of physicians from the United States and from Canada and many interesting papers on the care and treatment of the insane were read. The presidential address was delivered by Dr. James T. Searcy, of Tuscaloosa, Alabama.

The officers elected for the year 1913-1914 are: president, Dr. Carlos MacDonald, New York; vice-president, Dr. S. E. Smith, Richmond, Indiana; secretary-treasurer, Dr. Charles G. Wagner, Binghampton, N. Y. (reëlected).

BRANDON MEDICAL ASSOCIATION

The officers of the Brandon Medical Association for the year 1913-1914 are: hon. president, Dr. L. M. More; president, Dr. A. T. Condell; vice-president, Dr. H. E. Hicks; secretary-treasurer, Dr. H. S. Sharpe; executive, Dr. H. O. McDiarmid, Dr. E. C. Beer, and Dr. St. John, of Virden.

TORONTO ACADEMY OF MEDICINE

The officers of the Toronto Academy of Medicine for the year 1913-1914 are: president, Dr. Herbert J. Hamilton; vice-president, Dr. H. B. Anderson; secretary, Dr. W. Harley Smith; treasurer, Dr. W. A. Young; past president, Dr. R. A. Reeve.

Elective members of Council: Drs. Edmund E. King, H. A. Bruce, W. H. B. Aikins, D. J. Gibb Wishart, N. A. Powell, John Ferguson, J. A. Amyot, Graham Chambers.

Chairmen of Sections: medicine, Dr. J. T. Fotheringham; surgery, Dr. Wallace Scott; pathology, Dr. Duncan Graham;

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ophthalmology and oto-laryngology, Dr. D. N. Maclennan; state medicine, Dr. J. H. Elliott; pædiatrics, Dr. H. C. Parsons.

Secretaries and editors of Sections: medicine, Dr. Frederic Harrison, Dr. A. H. Rolph; surgery, Dr. Malcolm Cameron, Dr. Geo. Ewart Wilson; pathology, Dr. F. W. Rolph, Dr. C. E. C. Cole; ophthalmology and oto-laryngology, Dr. T. Alex. Davies, Dr. F. C. Trebilcock; state medicine, Dr. J. F. Hazlewood, Dr. G. G. Nasmith; pædiatrics, Dr, G. F. Boyer, Dr. J. S. A. Graham.

THROUGH Dr. Roux, of the Pasteur Institute, Paris, the hope was aroused at the Academy of Sciences, on June 16th, that an efficacious remedy may be found for whooping cough, a disease which, by its enfeebling effect, opens the way to so many serious, and even fatal, complications in children. M. Nicolle has succeeded by the aid of the living bacillus of whooping cough, discovered by M. Bordet, in preparing a serum which on injection almost always induces a reduction of severity in the accesses, and often causes the disappearance of the disease within a fortnight. M. Nicolle expects still further to improve his treatment.
—*Lancet*, June 28th, 1913.